THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

APRIL, 1898.

INFECTIOUS PNEUMONIA OF SHEEP.

BY W. R. DAVIS, NEW VETERINARY COLLEGE.

DURING the past few years correspondents in various parts of the country have from time to time sent to the college viscera of sheep, showing lesions very similar to those described below, and have asked for an opinion as to the condition of the organs, and as to the probable nature of the malady from which the animals suffered. As such an enquiry has been received from Yorkshire this week it would, perhaps, be useful to publish an account of the symptoms as briefly described by our correspondent, T. Snarry, Esq., M.R.C.V.S., Malton, and of the *post-mortem* appearances: "Called to see some ewes, two of which had died very suddenly. Most of the ewes are to lamb, some have lambed a fortnight ago. In 1896 the same owner lost twelve ewes under quite similar circumstances.

"Since my first visit, two days ago, five more ewes have died, making seven in all.

"*Symptoms.*—The first thing observed is that the animal suddenly goes off its food, and stands with drooping ears and a languid expression. It is afraid to move, and, when forced to do so, the gait is seen to be staggering. Diarrhœa is an almost constant symptom. The disease runs a very rapid course, death taking place in about twelve hours after they are first noticed to be ill.

"The owner has been on the farm for the past fourteen years. It is good sound grass land, and does not appear to have any poisonous plants growing on it.

"The sheep have had oats and hay for the past three weeks, and previous to that turnips.

"The wool pulls off the sick sheep very easily."

The viscera sent to the College were examined on the day of their arrival. Rumen, reticulum and omasum healthy and containing a good deal of food—hay, grass, and oats.

The abomasum held about a quart of fluid contents. Its mucous membrane was congested towards the pylorus; otherwise it appeared to be normal. About a foot of the duodenum next the pylorus was intensely hyperæmic on its mucous surface; through the remainder of its extent the small intestine was healthy, exception being made for a few hæmorrhagic points in the ileum. The cæcum was found to have the mucosa deeply congested and actual hæmorrhages in places.

The remainder of the intestines was fairly healthy.

The mesenteric glands were unaffected.

Uterus extremely congested and œdematous.

Cotyledons livid (the sheep had recently lambed).

The serous covering of uterus and that of the bowel was normal.

On opening the heart, both ventricles and auricles were found to be full of very dark and firm thrombi, which were difficult to remove, and which extended back into the veins.

Both lungs were congested, and showed purple and bright red areas. There was very extensive consolidation in both lungs, and it was limited to the posterior parts of the organ.

Over the consolidated portions the pleura was greatly thickened.

On cutting into the lung, the consolidated areas were dirty grey in colour, and bloody, frothy fluid issued from it on squeezing. It was somewhat anæmic.

Away from this, in the congested part of the lung, which was bright red, the veins were filled with the same firm, dark coagula observed in the heart.

On microscopic examination of sections cut from a piece of fresh tissue, there was evidence of intense pneumonia, with bronchitis and peri-bronchitis of the small tubes and pleurisy. The alveoli were in most parts almost full of catarrhal cells, and leucocytes, and red blood corpuscles, and granular material, but with very little fibrin.

The above particulars, while serving to describe the outbreak at present under observation, would also serve for those to which our attention has been called on several other occasions.

The most remarkable thing about the malady is the suddenness with which the animals affected by it succumb, leading, in some cases, to a suspicion of poisoning. The

phlegmatic disposition of the sheep may, perhaps, permit it to present the ordinary appearances of health while yet suffering from lung trouble (it is quite likely, however, that a very careful attention may have detected illness which otherwise escaped notice; for it is impossible that a condition of lung, such as the *post mortem* disclosed, could have been brought about in a few hours), still, an ordinary pneumonia that is going to prove fatal must, in any animal, take longer than twelve hours for its evolution.

Principal Williams is of opinion that this is a form of septic pneumonia, seen also in calves and lambs, in which the lung affection is only one of the phenomena, and that the disease is due to a general infection of the body by a micro-organism, probably, from its effects, allied to Koch's bacterium of mouse septicæmia.

THE COMMEMORATION MEDAL.

HER MAJESTY THE QUEEN has been graciously pleased to present to R. C. Trigger, Esq., J.P., Newcastle-under-Lyme, Staffordshire, and late President of the Royal College of Veterinary Surgeons, the medal to be worn in commemoration of the 60th anniversary of Her Majesty's reign.

Cases in Practice.

INCARCERATED SCROTAL HERNIA.

BY E. MARRISON, ESQ.

THIS was a case that I had the opportunity of observing while seeing practice with A. Plant, Esq., M.R.C.V.S., Bakewell, during the summer vacation, the subject being a dark brown shire stallion at the stud, four years old.

On arrival at the farm we found our patient presenting all the symptoms of spasmodic colic. He would walk round the box and throw himself down against the wall, and endeavour to roll on to the back, and if successful, would remain in that position for from ten to twenty minutes; that posture evidently afforded him great relief from his sufferings.

On securing the horse and making an examination, the pulse was found to be rapid with a very tense artery. There was patchy sweating on the abdomen and an absence of

borborygma. From the behaviour of the animal hernia was suspected, and on examining the scrotum an enlargement was observed on the left side above the testicle. This, on manipulation, was found to be a hernia. The contents were found, on manipulation, to be elastic and soft, the sac evidently containing a knuckle of bowel.

On making an examination per rectum, the strangulated intestine could be distinctly traced at the internal abdominal ring.

Before attempting the reduction of the hernia, the following anodyne draught was administered :—

Tinct. Opii.	3 ozs.
Spt. Chlorofm.	1 oz.
Aq. ad	16 ozs.

Soon after, the horse was cast with the hobbles, placed on his back, and maintained in that position by threading ropes from the limbs through some sleepers, which formed one side of the box. His hind quarters were raised by means of bundles of straw. An attempt was now made to reduce the hernia by taxis, and this, after a good deal of patient kneading from the outside and traction from within, was completely successful.

The owner was advised to have the animal castrated by the covered operation ; but as he would not consent to this, a bandage of elastic cotton webbing was placed on the scrotum above the testicles, and allowed to remain on for a few days.

After the hobbles were removed, another sedative draught was administered, this time containing tinct. opii. 2 oz. The horse, with careful treating as to dieting, soon made a good recovery. The owner was warned that it would be unsafe to again use the horse for stud purposes, as during the act of copulation, the inguinal canal would be enlarged by the abduction of the thighs, and by the weight of the viscera being thrown towards the pelvis, thus greatly facilitating the escape of a loop of intestine down the inguinal canal.

The horse continued to do well for twelve weeks, but despite the warnings, was occasionally used for stud purposes.

This, however, occurred once too often, for on the following day, after serving a mare, the symptoms already detailed again appeared, but this time in an aggravated form, the hernia now being double. We could not succeed in reducing it, and the animal died twelve hours after first manifesting pain.

MALIGNANT ADENOMA—STOMACH OF HORSE.

BY R. B. FREEMAN, ESQ., F.R.C.V.S., DUBLIN.

Wednesday, March 2nd, 1898.—Called at 7 a.m. to see a valuable chestnut blood hunter, six years old, the property of Lord George Scott, A.D.C. He had been hunted with fox-hounds on the previous Monday, and had a long day, being out of the stables from 9 a.m. till 8.15 p.m.

The following day the groom remarked him stiff in the box, and when out for walking exercise in the riding school. As he had lost the off hind shoe my smith was sent for to put one on, which he did with difficulty, remarking that the horse was sore of his feet. Next morning (Wednesday) horse more stiff, when I was called in. I found him to be suffering from laminitis, his hind feet being chiefly affected. Temperature 102, pulse full and regular, occasional twitching of hind legs, no inclination for food, bowels and kidneys quite regular. I lifted the off fore foot, and held it up a moment or two, when the horse went down, apparently getting great relief. I had all shoes off, pared soles well down, and had poultices applied, and frequently refreshed.

Gave tr. aconite (Fleming's) 20 minims, sp. ether. nit. 1 oz., liq. am. acet. 2 ozs., and continued the aconite, and am. acet., 10 minims of the former, and 2 ozs. of the latter, every third hour.

March 3rd.—Temperature 101, pulse and respiration normal. Mucous membrane greatly injected, no improvement in the feet, and still lying quietly for three or four hours at a time. When standing, pain in feet very acute at intervals. Continued aconite alone, and gave flax seed drinks, which he took well. Bowels and kidneys acting freely.

March 4th.—Temperature 101, pulse and respiration normal. Emaciation very noticeable yesterday and to-day. When lying down and after food, symptoms of abdominal pain—anxiously looking round at the flank—and tympany. Remarked to groom that I feared some stomach trouble. The groom then said Principal Williams and Mr. Watson had made the same remark when the horse had been under them for other ailments in Scotland. Gave tr. aconite 10 minims, whiskey 4 ozs., sp. am. aromat. 1 oz., every fourth hour. Bled freely at the toe of each hind foot, and afterwards changed to cold applications.

March 5th.—Temperature 101, pulse good. Apparently rather better, but weaker in rising. Feeds well. Continued whiskey, etc. Left chlorodyne 1 oz., to be given if spasms of pain severe; 3 ozs. given during the next 24 hours.

March 6th.—Temperature 101, no change, same treatment.

March 7th.—Temperature 101, pulse good, spasms of pain more frequent. Gave hydrat. chloral 2 drams, pot. iodi. 3 drams, water 1 pint, every third hour. And as there was more weakness in rising, had hind legs and loins well hand-rubbed with aconite, camphor and soap liniment.

March 8th.—Temperature 103, pulse full and strong, pain more frequent, and altogether a change for worse. I had the hind legs well rubbed with liniment of belladonna and aconite, and continued the chloral hydrat. and whiskey.

March 9th.—Temperature 105, great pain. Lord George gave me permission to have horse destroyed.

Note by Principal Williams.

The stomach sent by Mr. Freeman was examined by me, and presented the following appearances:—

The cuticular part of the organ appeared to be quite healthy. An area in the villous part of about four inches broad, and extending from the pylorus to the cuticular division of the mucous membrane, was also healthy but hyperæmic, the remaining part of the villous coat, especially along the greater curvature, was greatly altered.

It was much thickenened, in some places to the extent of nearly half-an-inch. The surface of this altered part was covered by a layer of greyish semi-translucent material. It could not be removed from the surface of the organ. Appearing through this jelly-like covering, were everywhere irregularly shaped patches of fleshy-looking tissue. These patches were of various sizes, most of them being somewhat circular, and about a quarter of an inch across. On making a section, this fleshy tissue was seen to go down to the serosa, and this membrane was thickened and hyperæmic, but was not greatly altered.

With a lens one could see that the jelly-like covering observed on the surface dipped down to varying distances into the fleshy tissue. A microscopic section, cut without hardening, and mounted in potassic acetate, at once showed this altered stomach to be the seat of an adenoid cancer. The accompanying sketch (by Mr. Spreull, student at the New Veterinary College) displays very well the microscopical appearances under the high power.

From many of the alveoli of the cancer the epithelium, which is distinctly columnar, has fallen off, and lies in a mass in the middle of its alveolus. This is, doubtless, due to the fact

that the section from which the drawing was made, was cut from fresh tissue. It is remarkable that the animal could have kept up its condition and have done its work so well with so large a portion of the digestive membrane of its stomach destroyed. The cachexia that usually accompanies malignant disease seems to have been quite absent.

It will also be noted from Mr. Freeman's report that the other organs appeared to be healthy. Secondary tumour

growth in the liver from cancer of the stomach, is a very common result.

A hind-foot from the horse was afterwards sent by Mr. Freeman, and disclosed the usual appearances in laminitis, separation of the horny from the podophylous tissue by inflammatory œdema, and exudation between these two structures.

The case is a very interesting one, and my best thanks are due to Mr. Freeman for his kindness in communicating it.

TUMOURS IN THE LATERAL VENTRICLES OF A HORSE.

BY A. M. MUNRO, ESQ., M.R.C.V.S., EDINBURGH.

DARK bay cart gelding, seven years old. Had been to work in the early morning and was brought in about eight o'clock and fed. The attendant, on going to his own breakfast, left the horse feeding well. On his return, however, the animal was found staggering in the stall and making attempts to rush forward, the head being kept elevated in a peculiar way. The horse was at once removed to a loose box, and on my arrival I found him leaning against the wall, with the chest pressing against the lower half of the box door. The eyes were staring vacantly, the pupils dilated. The pulse was slow, with a tense artery. When I approached the horse he elevated the head and kept it in that position, breathing hard the while. I diagnosed the case as one of stomach staggers, and gave at once an intravenous injection of physostigmine, which gave several evacuations in half-an-hour.

About four hours afterwards I gave a dose of aloes (7 drams in a ball) and told the attendant to keep the horse quiet.

Next morning, as the aloes had not acted, I ordered enemas, and by night the bowels were acting freely and the animal seemed greatly relieved.

The brain symptoms, though still present, were not nearly so acute. The patient was kept on low diet for a few days, rapidly improved, and finally appeared to have quite recovered and was ordered to be put to work. On the eighth day after the attack it was intended to work him, but on that day he was found to have another attack of staggers, more acute than the first.

Aloes and enemas were again resorted to, and in twenty-four hours the horse was about right again.

Two days afterwards another attack came on the animal, being exceedingly restless and having to lean against the wall for support. Occasionally he fell down and only regained his feet with great difficulty. A brain tumour was now diagnosed, and the animal was ordered to be slaughtered. On *post-mortem* examination all the thoracic and abdominal organs were found to be healthy, but on removing the brain two tumours were found in the lateral ventricles, which were examined, and thus reported on by Mr. Davis, New Veterinary College.

Two symmetrical tumours lying over the lateral ventricles. They are attached by long thin pedicles. They are oval, and

each is about the size of a small hen's egg. In consistence they are very firm, but that on the left side is quite soft for about one-third of its mass posteriorly. It has evidently undergone some degeneration there. As we wished to preserve the brain as a specimen with the tumours in situ, a small piece was cut out of the inferior surface of one of the tumours. This allowed one to see that the growth had a well-defined capsule; the section was pinkish in colour, and was crossed by numerous vessels which showed something like the vessels on the kidney when the capsule is stripped off.

At one part there appeared to be myxomatous softening. After hardening in alcohol, sections were cut and examined microscopically, and the tumour was found to be a fibro-psammoma.

It was made up for the most part of fibrous tissue bundles, and was very poor in cells.

A feature of all these psammomata is the peculiar laminated arrangement of proliferated endothelial cells round the blood vessels, forming nodes, impregnated with glancing sandy particles. Great numbers of these could be seen in every section examined. Here and there were collections of pigment granules. The fibrous tissue had in many places undergone myxomatous degeneration. Psammomata are sometimes stated to be nearly always sarcomatous growths. In this case the dearth of cell elements in the tumour would certainly not allow it to be classed as such.

TETANUS IN A COW.

BY R. CONNOCHIE, ESQ., SELKIRK.

FEBRUARY 1st, called to aged white cow. Had been calved about a week, but had not cleaned. A good deal of difficulty had been experienced in getting the calf, and the owner had six men pulling at ropes attached to the fœtus at one time.

The cleansing was removed by me with little difficulty, and the uterus washed out with permanganate of potash solution, and powders containing sulphate of iron, chlorate of potass, nux vomica, gentian, and salt were ordered and were continued for a few days, but were soon stopped, as the animal appeared to have completely recovered.

A week later I was called to see the cow and found her showing all the characteristic symptoms of tetanus. The jaws were firmly locked, the neck held stiffly, its muscles hard

and rigid; the rigidity over the loins by no means so well marked as one sees it in tetanus in the horse.

The cow could lie down, but in getting up she seemed to have some difficulty. The patient was very thin, but, notwithstanding this, I succeeded with a good deal of difficulty in administering an aperient drench.

I saw her the next day. The jaws were now locked with great severity, and it was quite impossible to get anything into her.

I was quite prepared for this, so took the precaution of having a very thin electuary of belladonna with me so that it could be spread on the tongue with very little difficulty. I showed the owner how to do it; I told him how often, saying I should not see her for two days.

This I did, when there was no improvement. I may add that her pulse and temperature were just normal.

It was on Friday I saw her last, and said then I would give her to the beginning of the week (meaning, of course, if she lived till that time); however word came on the Sunday afternoon that she was dead.

Deduction.—There were no visible wounds, and I put it down that the organisms gained entrance to the economy by means of abrasions in the urino-genital organs, produced while assistance was given to the cow in parturition.

SOME CASES.

BY W. L. GASCOYNE, ESQ., NEW VETERINARY COLLEGE, EDINBURGH.

Arsenical Poisoning in Sheep.

AT a farm in the neighbourhood of Ashby, three separate lots of sheep were dipped with a dip containing arsenic, and a month afterwards, as some were found to be suffering from maggots, these were dressed with the remainder of the dip, which was allowed to remain in the bath and had probably become concentrated by evaporation. The fact that it was the dregs that were used would also tend to make the solution a strong one.

Two days after the dressing we were called to see the sheep and ascertained that four had been found dead and a few others showed symptoms of illness, but as these were not very ill, and were apparently recovering, they received no treatment. They recovered, and there were no more deaths in the flock.

Post-mortem.—The bodies were distended with gas and the wool came off very readily. The principal lesions were in the abomasum and small intestines. The mucous membrane of these viscera was seen to be œdematous and so greatly congested that it appeared to be infiltrated with blood; patches here and there were necrotic. There was some congestion of the lungs. The other organs were healthy to all appearance.

Fatalities in Calves after Feeding on Cotton Cake.

Having run short of linseed cake, a farmer gave cotton cake dust to his calves. This was continued for a fortnight, when symptoms of illness were discovered, and we were sent for. There were nine calves in a large, loose box, and all were ill, and all exhibited the same symptoms. They were constipated, but did not give much sign of abdominal pain. They lay constantly, and could not be made to get up; and when lifted up, they were unable to stand, and quickly fell down again. Besides the extreme weakness, the principal symptom indicated great respiratory trouble. The breathing was very rapid and painful, temperature elevated, and pulse rapid.

They kept dying, and in the course of a few days, eight out of the nine calves were dead.

The treatment consisted in giving, in the first instance, an aperient of magnesia sulph., following this up by stimulants and salines. I regret that a *post-mortem* was not held.

Use of Anti-Tetanic Serum.

We operated on a foal six months old for umbilical hernia, using a pair of wooden clams for the purpose.

Ten days afterwards the foal developed symptoms of tetanus. The owner sent for us on Saturday night, and on Sunday we went to the farm, and found the foal suffering from tetanus, the attack being a fairly severe one, muscles rigid, especially those of the neck. There was general stiffness, and the tail was slightly elevated.

The jaws were not quite closed, and the foal was taking a little gruel, which it continued to drink during the illness. An electuary of belladonna extract was prescribed, and anti-tetanic serum was telegraphed for. This arrived on Monday, when we again visited the foal, and found the symptoms intensified, the jaws being now quite firmly locked.

Twenty c.c. of the serum were injected, and the dose was repeated every second day; on the Friday, when it got the third dose of serum, it was very bad, and had to be put into slings, as it was down and could not get up. On the Sunday it was still very bad, the jaws being firmly clenched, but on the following day favourable symptoms developed, and in the course of the next few days the patient was eating clover, and made an uneventful recovery.

A short time after this we were called to treat another case of tetanus in a foal, due to a gathered nail. The serum treatment was again adopted, and the patient went on very well for nearly a week, but was found dead one morning with the head twisted under the body. It apparently had been suffocated.

Editorial.

THE WALLEY MEMORIAL FUND.

A STATEMENT of receipts and expenditure, together with a list of subscribers to this fund, has been forwarded to us by the Secretary, C. Cunningham, Esq., Slateford. The sum total of the fund is £313 12s. The subscribers to it are for the most part members of the profession at home and abroad, but there also appear the names of friends outside of it who wished to mark their appreciation of the worth and abilities of the late Principal. We regret that space is wanting to publish the names of those who contributed to the fund.

IZAL.

WE have received some samples of this new disinfectant. In a preliminary tral of its effects, Izal gave entire satisfaction. Its odour is slight and rather pleasant; it appears to be non-poisonous, and so far as we have tried its antiseptic properties, they have left nothing to be desired. After a more extended use of the preparation, a further reference will be made to it.

Proceedings of the Veterinary Medical Societies, etc.

ROYAL VETERINARY COLLEGE V.M.A.

THE 254th ordinary meeting of the Association was held in the New Theatre of the College, on Friday, March 4th, at 6.30 p.m. Mr. H. W. Percy occupied the chair. There were present:—Mr. R. W. Hall, M.R.C.V.S. (hon. sec.), and 32 members.

Mr. E. BROWN read a most instructive essay on "Parturient Apoplexy," dealing with his subject in a thoroughly competent manner, and laying particular stress upon the adoption of hygienic measures as a means of preventing the disease.

At the conclusion of this essay a discussion, opened by Mr. RADWAY, took place upon the paper on the "Tsetse Fly Disease," read by Mr. Hirst at the last meeting of the Association.

Votes of thanks to the Essayist and Chairman terminated the proceedings.

C. RADWAY, *Assist. Sec.*

THE CENTRAL VETERINARY MEDICAL SOCIETY.

AN ordinary meeting was held on Thursday night, 3rd March, at the Royal College of Veterinary Surgeons, 10, Red Lion Square, Holborn, Mr. J. A. W. Dollar, president, occupying the chair. There were present 48 Fellows, and seven visitors.

On the motion of Mr. ROOTS, seconded by Mr. PRUDAMES, the minutes of the preceding meeting were taken as read; and on the proposition of Mr. BARRETT, seconded by Mr. REEKIE, they were adopted.

The late Mr. J. E. Tooth.

Communications were read from Mr. S. Villar and Professor F. Hobday expressing regret at their inability to attend. Mr. Hobday in his letter referred to the death of Mr. J. E. Tooth, of the Hermitage, Forty Hill, Enfield, N., a Fellow of the Society, who had fallen a victim to influenza, and suggested that a vote of condolence with the widow and family of the deceased gentleman should be passed.

Mr. PRUDAMES moved, and Mr. W. E. TAYLOR seconded, and the Chairman supported, a vote of condolence—which was unanimously passed—with the relatives of the late Mr. Tooth, whose loss the Fellows of the Society deeply lamented.

MALLEIN AND ITS USES.

BY W. E. TAYLOR, M.R.C.V.S.

Gentlemen,—Five years ago the company with which I am connected had glanders among its horses, and although great efforts were made to stamp it out, we made only slow progress. Now we are practically free from glanders and the chief agent next to human intelligence in our success has been the systematic use of mallein. We protect our stud against a re-introduction of the disease by testing every new purchase with mallein, and we cleanse our stables by detecting every case by the reaction of the same agent. Not only do we do this, but every horse sent to our farm has this test applied, and again on its return.

Professor Nocard's recently published experience with the Paris Carriage Company has caused so much surprise that it occurs to me that our experiences

should be made public. A great deal of work has been done in London with mallein, and no better opportunity could be afforded for its collection than at a meeting of the Central Veterinary Society. My own personal experience is offered for comparison with that of others, and thus we shall probably arrive at some practically useful result. I do not propose to inflict upon you a long table of statistics, but merely to state results under a few headings.

The source of the mallein employed.—The bulk of mallein used by me has been obtained from Messrs. Willows, Francis, and Butler.

Method of Injecting.—I use an ordinary hypodermic syringe and keep it entirely for this purpose, and inject 20 drops on the near side of the neck; no special precautions are taken to wash the neck, etc., but I sterilize the syringe after each injection with a solution of carbolic acid about 1 to 20, and in only two cases have I had any bad results; in each of these an abscess formed at the point of inoculation.

Keeping qualities of Mallein.—I have never tried how long mallein will keep in an ordinary glass stoppered bottle, but I have used with success mallein that I had kept by me for quite two months. I kept it in a cool place and in the dark.

Reaction.—The specific reaction consists in a rise of temperature and a swelling at the seat of injection. When disease is present I have not failed to observe this, but all cases do not present an equally definite reaction. In cases where the temperature is already raised to 103°, or thereabouts, the rise of temperature is not reliable, very often it does not rise, and in some cases I have known it to fall one or two degrees in the next 24 hours. When no clinical symptoms are visible I should not act upon a partial reaction, but should require both rise of temperature and local swelling. When some indefinite clinical sign exists such as an enlarged maxillary gland, swollen leg, or a general wasting of the body, with a rise of temperature which persistently continues, I use mallein and rely upon the local swelling as sufficient evidence. The swelling varies greatly in size and in tenderness, it varies also in the rapidity with which it forms; usually it reaches its greatest size in 24 hours, but I have seen it go on increasing for a couple of days. Sometimes it rapidly subsides, but most local swellings require a few days or even a week to entirely disappear. Some small swellings are seen in horses that are glandered—not over three inches across. A swelling of this size I do not consider indicative unless it is distinctly painful when handled, and I attach particular importance to the amount of pain an animal shows when you manipulate the seat of injection, and also to the character of the swelling. If it is very hard and painful on pressure, I have no hesitation in condemning the animal. I have seen a horse that swelled from the point of injection all the way up his neck right up to his ear, and the amount of constitutional disturbance was something to be remembered.

Diagnostic Value.—Practically, I consider reaction to an injection of mallein quite reliable as an indication of glanders. I have, for the purpose of experiment, injected horses with mallein that have been suffering from strangles, purpura, pneumonia, and inflammatory œdema, but have had no reaction.

Indefinite Reaction.—All the reactions of mallein are not definite, or, in other words, not so clear and positive as to afford safe guidance to a man of little experience. Probably ninety out of every hundred cases tested with mallein give a reaction which may be positively accepted as accurate. If I had to fix a figure on the thermometer over which any rise was indicative of disease, I should say 103° F. If I had to fix a measurement of the local swelling as indicative of disease, I should say four inches across. My experience (and I might here state that during the last five years we have

injected upwards of 4,000 horses) leads me to believe that a hard and fast line of this kind is useful, but that it must not be accepted as quite definite: there are variations which require skill and care in their interpretation.

I have seen a four-inch local swelling, but no rise of temperature above 102°. I have also seen a rise of temperature to 105°, with only a two-inch local swelling. Occasionally there is no rise of temperature and yet a small local swelling of two inches—usually a round, soft, non-painful swelling which goes away rapidly. In one case no local swelling appeared until 36 hours after injection. The temperature only rose from 100 to 101°. This horse I considered not diseased and although no *post-mortem* was made I think I am correct in saying that as it has since shown no symptoms we may accept the mallein test as right, and that all swellings which do not appear within 24 hours are non-specific.

I have heard of cases in which mallein is alleged to have caused no reaction although some clinical symptom was evident and a *post-mortem* has revealed glanders lesions in the lungs. I have seen no such cases, but I have seen two horses which I thought were diseased in which mallein failed to produce a reaction and a *post-mortem* verified the indication of mallein much to my surprise. These cases in which mallein gives an indefinite reaction are important when the suspected horse is a high-priced one, but when the subject is of little value the safest course to follow is to slaughter.

An indefinite reaction to mallein when applied by the local authorities is serious because of the delay which follows and because a claim may be made for the slaughter of a horse which shows no lesions of glanders on a *post-mortem* examination. When time is of no importance the right thing to do, when an injection of mallein gives indefinite reaction, is to wait and repeat the dose.

Use of Mallein in Private Stables.—Whenever a stud of horses shows a case of glanders the veterinary surgeon should, after slaughter and removal of the diseased animal, test all the others with mallein; when there is no reason to expect extensive infection, the whole lot may be done at once. When it is probable that many may react, it is best to inject a few at a time so as to cause as little interference as possible with work. If a man has 50 horses, and 10 of them react, his business is disarranged for a week or 10 days because he cannot put a collar on the swollen neck. By injecting 10 at a time, this stop of work is spread over a larger space of time and is more easily provided for.

All the horses that react should be separated and put in a stable by themselves, but where this is impracticable they should stand together on one side, and at one end of the stable. When the reactions are not more than four or five per cent., the simplest proceeding is to slaughter, and especially if the authorities give any reasonable compensation.

As the law stands at present, there is only a *moral compulsion* not to sell horses that react to mallein.

It is a great temptation to a poor man who has detected all the diseased horses in his stable by mallein, to clear out the disease at once by sale, and such a course will doubtless be often adopted until the law is so altered as to forbid it, and to offer him a compensation which will induce him to slaughter instead of sell.

Use of mallein by authorities.—It has been stated by persons in authority that mallein is only in an experimental stage, and that more evidence of its value is needed before the Government would be justified in regulating its use. Such a statement can only be made by persons who have not used it, and who do not know of the immense amount of experience that exists in this country, and especially in London. I venture to say that no metropolitan practitioner has not used it, and I am certain that no one has used it who is

not satisfied with its value. The members of this veterinary society possess all the knowledge of mallein necessary to convince the most sceptical, and I hope to-night we may hear all that can be said against it.

My experience enables me to say that whereas before mallein was provided, it required three or four years constant skilled attention to clear a badly-infected stable of glanders, now this can be done in as many weeks, without excessive loss and trouble to the owner, and with a certainty that could never be attained in past times.

Curative Action of Mallein.—Professor Nocard has recently startled the veterinary world by publishing some facts which go to show that mallein has a curative effect on glanders. I have the greatest faith in any facts published by this gentleman, and his statements are certainly very strong ones. My own observation, and the experience of many other veterinary surgeons in London, points in the direction of M. Nocard's conclusion, but I can only go so far as to say that mallein has a marked controlling and restraining effect upon the disease. I have seen horses react and then improve in condition. I have known reacting horses work for months afterwards without developing any clinical signs of disease, but these cases were in the early days of mallein, and recently we have never kept alive a horse that shows typical reaction.

Of course, the value of mallein, if it cures a proportion of glanders cases, is vastly increased, but without this property it is still invaluable. At present its diagnostic action is sufficient to enable us to pick out every infected horse from a stud, and this of itself is three-fourths of the battle. My personal experience is only a proportion of that possessed by London practitioners, and all with whom I have consulted, agree with me that the Government should take steps to bring their regulations up to the level of to-day's science and practice. The law now is like a dog in the manger, it will not use mallein itself nor permit others to do so. If a veterinary surgeon n London uses mallein to help him in obtaining a healthy stable, he is in danger of an inspector coming in and seizing all those horses that react. The officer may then label them all as suspicious, and prevent their movement out of the stable for as long a time as he likes, or he may kill them all and pay carcase value for them. I ask any rational man if this is justice, and if it is the way to get rid of a dangerous and wasteful disease.

Gentlemen, I ask you if the law which does such things is a good law, or if it should not be altered with all speed. What is wanted, in my opinion, is very simple, and may be expressed in four sentences :—

(1) Compulsory slaughter of glandered horses.
(2) Payment of fair compensation.
(3) Recognition of reaction to mallein as evidence of glanders infection.
(4) Power to test with mallein all infected studs, and to separate those horses that react.

These regulations should be applied uniformly all over the country, and local authorities should be permitted no escape from carrying out their duties; the result would be a country free from glanders in a few years' time. I speak with some considerable amount of confidence, as with the exception of paragraph No. 2, relating to a fair compensation, the other regulations have been carried out by my colleague, Mr. Porch, and myself, and as I have before stated we are now practically free from the disease.

Discussion.

Professor McFadyean, who opened the discussion said : I rise with great pleasure, at the call of the chairman, to open the discussion on the interesting paper by Mr. Taylor to which we have just listened. My task is likely to be

a very light one, because I think, with scarcely an exception—certainly without any important exception—I freely endorse all the views to which Mr. Taylor has given expression. I think that Mr. Taylor's contribution to this subject is one of great value, inasmuch as it is founded on an extensive experience. I believe his paper cannot fail to have a wide-reaching and important effect as, if it obtains the publicity it deserves, it will bring home to horse owners probably better than anything which has preceded it, that they have at their hand a comparatively inexpensive method of clearing glanders out of their stables. I think I may claim for Mr. Taylor's paper that it is an important corroboration of the views that have for some time been expressed by myself and other members of this Society. I took a note of one or two points about which I should like some fuller information, or, in some cases, about which I should like to make a remark. Mr. Taylor said the stud which is under his charge is now practically free from glanders. Well, I would like him to say (if there are no reasons why he should not be perfectly explicit on the point) what is meant by "practically" free from glanders as distinguished from "free" from glanders. Does it mean that, for some considerable period of time, no case of glanders has developed in the stock, or does he mean that the practices which he recommends as being the best, have been applied to the horses of the company; in other words, is his assertion that the horses of the company are free from glanders, based upon the universal application of the mallein test to these horses, and the isolation or destruction of those that reacted? If the answer be in the negative, then I recognise the wisdom of qualifying the statement that the stock is free from glanders by the word "practically," for I hold that in a stock in which cases of glanders have occurred, only one thing justifies the assertion, "free from glanders," and that is that the horses have successfully emerged from the mallein test. Mr. Taylor referred to the keeping qualities of mallein, and he said he had himself used mallein which had been kept for two months, and found it to act quite well. Personally I have had considerable opportunities of observing the keeping qualities of mallein, and many other points connected with its use, and I can go a long way beyond two months. I know, as a matter of observation, that mallein will keep for twelve months, and that at the end of that time, if it has been kept in the dark, it has apparently suffered no deterioration. At any rate, the mallein which I have manufactured myself will provoke a reaction in glanders at the end of that time. Not only that, but I have received communications from those to whom I have supplied mallein in such tropical countries as India and Africa testifying that there, after long periods, it has been found to keep quite well and to act as we know from our own experience it acts at home. I quite agree with Mr. Taylor that the mallein test, so far as it relates to the disturbance of temperature, is not reliable in the case of a horse in which the temperature is already febrile, where it is 103°; and the experience which I have is similar to that of Mr. Taylor: that not only will the mallein cause the horse's temperature to go up if the temperature be 103°, but in a good many cases it will also cause it to come down. Only yesterday and to-day we had an interesting case of this sort at the Royal Veterinary College, a case under the care of my colleague, Professor Macqueen. It was a clinically glandered horse. Professor Macqueen made the diagnosis without the use of mallein. It was a case in which the horse looked as if it might die very soon from glanders. It was tested with mallein. Its temperature was 104°, I think, at the time, and it rose very slightly to 105°, and then declined to 102° within twenty-four hours. I think that is an exceedingly interesting point. The fact is on all fours with what we have known for a good many years with reference to the tuberculin test—that is to say, an animal in the advanced stage of the disease will not always react. Very frequently it will not react,

and this is not, perhaps, so surprising as at first sight it appears, for in the last stages of the disease the powers the animal possessed to react have been lost. I think that the cases in which there is not a distinct local reaction also come under that head. I certainly was very much interested the day before I had this particular horse to which I refer killed. I was much interested in noticing that not only had he no temperature reaction but he had also practically no local reaction. Another horse done at the same time had, twenty-four hours afterwards, a swelling of the least extent, but in this particular glandered horses to which I am alluding, the swelling was perhaps scarcely existent, and one required to feel the skin in order to make out where the mallein had been injected. There is no doubt that this was a case of glanders, for when a *post-mortem* examination was made this afternoon, it was found the animal had rather extensive and typical lesions. There is only one point regarding the interpretation of the phenomena that ensued after the injection of mallein concerning which I am not in complete agreement with Mr. Taylor. I do not think that the pain evinced on manipulation of the local swelling is a very valuable indication. So far as my experience goes the pain is generally proportional to the size, in other words, I think size is more important than sensitiveness and for this reason—we all know there is the greatest difference between different horses. as between different individuals, as regards sensitiveness. We often find, in injecting horses with mallein, that the same needle prick will by borne with scarcely a movement by one horse, while another is most obstreperous to what we must suppose is the infliction of exactly the same degree of pain. Mr. Taylor referred to so-called "doubtful cases." He mentioned one in which there was a distinct swelling but very little rise of temperature, and that horse has been kept under observation since. He has developed no symptoms of glanders, Mr. Taylor says he thinks, therefore, it is permissible to conclude that the horse was not glandered, that the local swelling was not due to glanders. Well, I dissent from that. I dissent from the statement that because a particular horse withiu a definite period of time—even a long time—developes no symptoms of glanders, that horse may, therefore, be considered not glandered. I do not think that is sound. I think there is abundant experience to show that a horse which is glandered may, during a period of many months afterwards, remain apparently free from glanders. I entirely agree (as I am sure all those who have had any experiene will) with Mr. Taylor when he objects to anybody saying that mallein is in an experimental stage. I do not exactly know who said this. (Mr. Hunting: Professor Brown in the Royal Agricultural Society's Journal.) I understood from Mr. Taylor that there was an expression of opinion to that effect. I do not care who said it, but I am quite of opinion that it is not a correct statement. I consider the mallein test has long passed the experimental stage. It is not for us at this stage to discuss whether the mallein test is fallible or infallible, but I am sure we are all prepared to say that it approaches nearer the infallible than any of us dared to hope for before its introduction. I think there has been some slight misunderstanding, shared in by Mr. Taylor, with regard to what M. Nocard said in his paper, to which he (Mr. Taylor) referred. I hear a good deal about the curative action of mallein. I may have misinterpreted M. Nocard's paper, but I do not think he has very distinctly said that mallein has a curative effect. As I understand this paper, what it goes to prove is this: that all horses that react to mallein —distinctly react to mallein, and we are all prepared to accept that of the 230 horses to which M. Nocard refers—a considerable number kept under observation afterwards would develop no clinical symptoms of glanders and cease to react to mallein. Not only that, but they might, with impunity, be drafted back among healthy horses without, apparently, communicating

disease. But that by no means compels anyone to imagine that mallein is curative generally. There is obviously another interpretation, and that is that glanders is by no means the invariably fatal disease we generally suppose it to be, and that in the meanwhile, and until we have further information, that is the interpretation which I am personally inclined to accept. We all know, as M. Nocard points out, that glanders is practically an incurable disease, when by glanders is meant clinical glanders. The horse that has ulcers and farcy buds on his body seldom or never recovers. But of the cases of which we have no knowledge before injecting mallein, the cases discovered merely by the use of mallein, a considerable number terminate in recovery whether you test them with mallein or not. I do not think that mallein, when used simply to promote a reaction, and thus employed at intervals of several months, can exercise any appreciable effect on the cure of the disease. I have already recognised, speaking with regard to the curative effect of mallein, that a good many horses which react to mallein afterwards cease to react, and apparently lose the power of spreading infection. I was rather surprised to hear Mr. Taylor state that the law not only does not use mallein itself, but that it, in a measure, forbids the use of it. We all recollect that that subject was ventilated here, and I thought that that discussion had put a stop to any such action on the part of the local authority as the seizure of apparently glandered horses merely because they reacted to mallein. I am surprised to hear that this is still the policy of the local authority, and I certainly think that the horseowner and private veterinary surgeon should kick against it with all their might, until the law recognises the use of mallein and treats outbreaks of glanders in a rational way. I do not think their way is rational so long as the law is content with the slaughter of one or two horses showing clinical symptoms, while it allows all the other horses to go free. I think a horse-owner has the means of getting rid of glanders at a comparatively small cost, and, as I have frequently said before, he should not wait to be compelled to do it, but it will pay him better to take action at once rather than wait perhaps a year, or two years, or it may be ten years, for compensation.

Mr. PRUDAMES asked Mr. Taylor whether, prior to inoculation, he took the temperature of each animal. In his (Mr. Prudames') own practice ten or a dozen horses were inoculated, several of which reacted fully. Three, he thought, were destroyed, the *post-mortem* examination showing lesions of glanders, although there were no clinical lesions in any of them. But one animal in particular showed certain lesions of a rather extensive character, and was very sensitive to pressure, but the temperature of the animal did not rise so much as in the other cases. The horse was not destroyed, the swelling subsided in the usual manner, and the animal was still at work. It was two years ago since this horse was injected, and it was now apparently healthy and well.

(*To be continued.*)

SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

THE annual meeting of the Scottish Metropolitan Veterinary Medical Society was heid in the Clarendon Hotel, 104, Princes Street, on the afternoon of Wednesday, 2nd March. The chair was occupied by Mr. T. Inglis, Forfar, vice-president of the society, and among those present were Principal Williams, Professor W. O. Williams, Professor W. R. Davis, Professor McLauchlan Young, Aberdeen; Messrs. R. Rutherford, Pres.B.Ex., R.C.V.S., Edinburgh; J. Trotter, Edinburgh; J. Aitken, Dalkeith; J. Storie, East Linton; J. Borthwick, Kirkliston; J. Hepburn, Coldstream; J. Hutton,

Kelso; A. M. Munro, Edinburgh; J. Connochie, Aytoun; and D. Young, editor of the *North British Agriculturist.*

Letters of apology were read from the President (Mr. Andrew Boyd, Melrose), Mr. Hutchison, vice-convener of the county council of Perth; Mr. Thompson, Aspatria; Mr. Beach, Glasgow; Mr. Stephenson, Newcastle-on-Tyne; Mr. Cameron, Berwick-on-Tweed, and Mr. Peter Moir, honorary secretary.

Mr. Moir's Bereavement.

Principal WILLIAMS said he was sure they must all sympathise with Mr. Moir in his bereavement. For some time past he had been totally unhinged, the death of his wife having been expected for a fortnight at least. He proposed that they should send a letter of condolence to Mr. Moir from the society.

This was unanimously agreed to.

The Late Mr. Finlay Dun.

The following letter was read from Mr. E. C. Dun, Gorgie House :—"Dear sir, owing to my absence from home, your kind letter has remained too long unanswered. My brothers, sister, and I are greatly touched by the large number of letters of condolence we have received on the death of our father, Mr. Finlay Dun."

National Veterinary Benevolent and Mutual Defence Society, Manchester.

Mr. A. M. MUNRO, Edinburgh, who acted as secretary in the absence of Mr. Moir, read the following letter:—"Dear sir, I herewith have pleasure in forwarding you a few copies of revised rules, balance sheet, and list of members of the above society. The Council will feel obliged if you will kindly peruse the same and bring the matter before the members of your association, feeling assured that the advantages offered to members of the profession only require to be more generally known to considerably increase the number of members. Thanking you in anticipation, I am, etc., Sam. Locke, hon. secretary."

Principal WILLIAMS said they were all aware that an opposition society had been started in London. The Benevolent and Mutual Defence Society located in Manchester was a national Society, and had now been in existence for 25 years. It was now a comparatively wealthy Society, having plenty of accumulated funds, and it would be to the advantage of members and their own Society to become members of the National Benevolent Society.

The Rinderpest in Basutoland.

Professor W. R. DAVIS, New Veterinary College, Edinburgh, gave some experiences of the rinderpest in Basutoland, from whence he has recently returned. He said that when he was asked by the Secretary to lay before the Society some of his experiences with regard to rinderpest in South Africa, he felt it was hardly a subject that he could hope to interest them very much in, because it was a disease that very few of them had seen, and he was sure it was a disease that none of them would like to see affecting the cattle in this country. On the one hand he felt that he could not interest them, and on the other hand he felt that he would not like to be churlish and refuse them after being asked. His remarks, however, would have the recommendation of being brief. In the first place he desired to point out that Basutoland was

altogether separate from Cape Colony. It was an Imperial colony where the land was held in trust by the Government of England for the Basutos, and it was governed by a resident commissioner and magistrates, whose laws were enforced by the chiefs under the English officers. Whatever regulations in regard to the rinderpest were made by Cape Colony or the Free State or the Transvaal had nothing whatever to do with Basutoland, which made its own arrangements. In the first place they resolved to establish quarantine regulations, and Basutoland lent itself readily to such quarantine regulations. The boundaries consisted of a broad river with steep banks, only crossed by certain drifts, and where the river did not go, there was a very precipitous range of mountains, leading down into Natal. It would thus be seen that the natives in Basutoland were well situated in order to keep out cattle or to regulate the transit of cattle. They closed all the drifts except a few, and these only were allowed to be used, and they disinfected everybody who entered Basutoland, by plunging them into a great basin of Jeyes' fluid. Altogether they took most stringent regulations, and saw that they were carried out. However, in spite of all their care, the disease was imported into Basutoland. It was supposed that the disease was imported through some Basutos living in neighbouring states. Many of them had vendettas, and it was supposed that, for revenge, they brought some infected material from dead animals, and introduced it into the kraals or put it where the animals were grazing. Previous to the introduction of the disease, however, the Resident Commissioner had been very energetic, and had taken the advice of Dr. Hutcheon, the Chief Veterinary Surgeon for the Cape, who recommended the adoption of Koch's system of bile inoculation, which consisted of the inoculation into the animals of about three drachms of bile taken from animals that had died from the disease. He had, however, no means of enforcing the adoption of this system of treatment. He called a meeting of the chiefs, and recommended them to adopt this system, but most of them refused to have anything to do with it. They thought the white men had introduced this disease wilfully for the purpose of taking away their cattle from them. There were several other systems of inoculation going on in the other States. In some places they used scrapings from the intestines, mixed with blood from the diseased animals, and other filthy compounds. When he got out, he found that a good many of the cattle had already been inoculated, as the Resident Commissioner had got the services of some veterinary surgeons from the Cape. One of them, Mr. Armstrong, was still there, and he remained with him for about a fortnight, and then he (Professor Davis) went on by himself.

The taking of the gall was a very important matter. They never killed any of the animals. In the colony they used to take an animal and inoculate it with rinderpest blood, and when sick for a few days they killed it to get the gall. They, in Basutoland, however, allowed the animals first to die and then took the gall. The best antiseptic was chinosol, which was a perfect disinfectant, and did not take the skin off their hands like carbolic. A very small percentage of the galls opened gave a typical gall. Koch said the gall should be of a clear dark green colour, free from odour. It was often next to impossible to find gall with all these qualities. They used to reject 60 or 70 per cent. of them. In order to save himself the trouble of collecting the gall, they had natives trained to do this work, these being mostly black policemen. They used strict antiseptic precautions, and put the gall into perfectly clean bottles. One might think that he should have done this himself, but it was found quite impossible to inoculate and take the bile as well. Every morning as soon as he got up about a dozen Basutos would roll up to the place where he

was staying, each with a bottle of gall for him to approve of before it was used. Having seen that each man had proper gall, he made an appointment with him for the next day, when he went to his place. When he got there he usually found a great many more cattle than there was bile to overtake. There would sometimes be 600 or 700 cattle, and nearly as many men, all naked with the exception of loin cloths. These cattle were extremely wild. When he first read about the gall inoculation he thought there would be very little use for casting the cattle, but he very soon found out that it was necessary to do so, because they were so wild. The way they cast the animals was as follows: They had long pieces of untanned hide with a loop at one end. The animal was driven into a kraal, where the loop was put round the animal's horn. As soon as that was done, they bustled the beast out to the field outside, three or four men hanging on to the rope, while the animal charged at them. As soon as it quietened down a bit they put a rope round its hind legs and pulled straight back, when down the animal went. In carrying out the inoculation a great deal of care was required. One had to use instruments that were well antiseptized, and the skin had to be kept clean and some antiseptic put upon it, as they were apt to get blood-poisoning. He used to have a man sitting on a wall with a stick, and as each animal was inoculated he put a nick upon the stick. They were very good counters, and he found that the number inoculated in one day would often amount to about 350.

With regard to the effects of the inoculation, it might be said that the local effects were not great as a rule. There was a swelling, perhaps, as large as their fist, sometimes larger. It depended, of course upon the nature of the gall. In spite of all antiseptics, they sometimes got a good deal of local reaction, but the swelling was never so great as to cause very much lameness. It used to extend down towards the brisket, and was hot and painful, but was not of a serious nature by any means. The general effects of the gall varied greatly, and that was the weak point in the use of the inoculation. Some of the cattle would show no effects whatever, and they would be just as liable to rinderpest as before, and on the other hand a number of them would die. Then there were the cases of the happy ones where the animals got merely sick. They got a rise of temperature, became dull, and went off their food. When they recovered they remained immune. The length of the immunity in the case of animals which had been rendered immune by the gall was certainly more than nine months, and the animal would in no circumstances get another dose of the disease. After he got the animals inoculated he was ready to use the serum treatment if the disease broke out among these inoculated cattle, but he never got an opportunity of using it, so that they would see the immunity must be very lasting. These cattle were all along exposed to infection, and when it lasted for nine months the probability was that it would be a permanent thing for them. The varying results were the weakest point of the inoculation. It was almost impossible to tell by the physical appearance of the gall, whether it was going to give immunity or kill all the animals, or have no effect upon them at all. With the gall that one would have thought came up to Koch's definition of the best sort, they sometimes got the worst results, and sometimes, to his happy astonishment, he got the best results with what he had thought was poor gall. He could not tell exactly the number of cattle inoculated, but there were considerably over 100,000, and of these they claimed that 70 per cent. had recovered. It was rather a difficult matter, as they might suppose, to get reliable statistics from the natives, but these were as reliable as they could get, and were said to be fairly near the mark.

The gall seemed to protect the offspring; at any rate, a great number of these animals had had calves since, and these had shown no signs of taking

on the disease. It had been proved, however, that animals affected with rinderpest might give rinderpest to the calves *in utero*. *Post-mortems* had been made at Kimberley, and the rinderpest lesions had been found in the calf before birth.

They finished the inoculation with gall about the end of September, and then the Resident Commissioner made up his mind that in case there should be fresh outbreaks among these inoculated cattle, he would be ready with the serum inoculation. He was accordingly asked to go to Kimberley, and on getting there he went to the compound, which was presided over by Dr. Turner, and found a large number of cattle tied to posts outside, with no cover over them, and a great number were sick from rinderpest. He had an opportunity of seeing the symptoms, and of making a large number of *post-mortems*. Doubtless, they would like to hear about the serum treatment, because it was claimed that serum was a protective and curative agent, and that when an animal had recovered from the treatment, it would not take the disease. They took an animal which had had the rinderpest and had recovered, and proceeded to what they called "fortify" it, that was to say, they injected it with rinderpest blood 20 c.c., then 50 c.c., 200 c.c., and then 500 c.c., and as much as 1,000 c.c. at one inoculation, but not at the same place; perhaps 250 at the shoulder, another 250 at the flank, and 250 each at the shoulder and flank of the other side. After the animal has had this inoculation of rinderpest blood, the changes noticed are, as a rule, merely a rise of temperature, going up to 105 degrees, and then back to the normal, and the beast feeding again in the course of four or five days, when it was ready for another inoculation of rinderpest blood. By the way, they did not inject the blood as they drew it from the rinderpest animal. They stirred it up with whisks, and removed the fibrine and injected the defribinated blood. Then the fortified animal was ready for serum purposes. In bleeding they cast the animal pretty much in the way he had already described. They disinfected the neck well, put the tape round the neck, and pushed in a sharp canula, previously making an incision over the jugular, and they drew off the blood into conical shaped flasks, which had been carefully sterilised, having a plug of cotton wool in the top orifice, and below that was a little spout which was also covered with cotton wool. These flasks held about 70 ounces, or two metres. They allowed the blood from the fortified animal to stand for 24 hours, being usually kept in a cool place; then they poured off the serum, which had a straw colour, and they added one half per cent. of carbolic acid to preserve it.

The loss was very great in getting serum. They could only get about one-third. That was to say, if they drew three pints of blood, they only got one pint of serum. Instead of using serum a great many had injected defibrinated blood instead. They took out the fibrine, and then used this defibrinated blood. The worst thing about the defibrinated blood was that it would not keep. The serum could be kept any length of time, but defibrinated blood would only last three or four days. Supposing they had a healthy animal, they injected at the same time on one side about 1 c.c. of rinderpest blood, and on the other side about 20 to 30 c.c. of the serum. This was what was done at Kimberley, but at some other places, including the Transvaal, the veterinary surgeons recommended that instead of doing this, they should take the healthy animals, expose them to the disease, and then after a couple of days inject the serum, and thus give the animals a chance of taking on the disease, and the serum in this way acted curatively, and on recovery the animal was immune. In the other case the immunity might pass off in the course of a week or two. It was better to allow the animals to get the disease before they gave them the serum, in order to render them immune. He brought back with him

from Kimberley five cattle. He injected them with repeated doses of rinderpest blood, and he had bled them repeatedly and collected the serum, but there had not been any secondary outbreaks among the bile inoculated cattle, so that he had never had an opportunity of using the serum himself. He saw it used a great many times at Kimberley, but he did not form a very favourable opinion about its use on a healthy herd. He believed it had very curative properties if an animal is sick, but he did not think it was of any use as a preventive.

With regard to the symptoms, the incubation period usually was four days in the case of those animals inoculated with rinderpest blood to give them the disease. About four days was the time before they got rise of temperature. About the sixth day there were decided symptoms. The first things noticed were dulness, running from the nose, constant thirst, tremblings, fœtid breath, looking terribly depressed, while the fæces were often covered with blood. Then diarrhœa set in with muscular tremblings and great weakness and emaciation and straining with the eyes sunken, while they lay down persistently. He had seen on three occasions rabid symptoms, when the animals seemed to have gone mad. He remembered on one occasion going with an orderly to see some cattle. When he came up some were lying down, and he got off his horse, and left it with the orderly. All of a sudden one of these animals got up and deliberately charged at the two horses, and the policeman slid off his own horse and left the two horses to the brute. He had on one or two occasions seen such symptoms, as if the animals were mad. These symptoms they knew quite well were in the text-books. He did not think there was anything about the symptoms of this disease to clearly differentiate it from other serious disease affecting the digestive apparatus of cattle, except of course the difference in the discharge from the eyes and nose, otherwise they would simply think the animal had got some grave affection of the digestive organs. In hot weather the disease was of a milder type. The losses were smaller when it was hot. The disease had very peculiar ways of manifesting itself. In one case it broke out with three animals affected and then another and another, as if it were merely smouldering ; then it seemed to wake up and the cattle died by the dozen. The chiefs had great power, and sometimes they would not inoculate their own cattle nor allow their men to inoculate theirs. One man lost nearly the whole of his cattle, because even white men were not allowed to inoculate their cattle, if they were under a particular chief. It was only when they were under a chief who had adopted inoculation that they were able to do so, otherwise they had to see their cattle die without the chance of getting them saved. Some villages escaped altogether, and did not get the disease, although it was all around them.

He had plenty of opportunities of making *post-mortems*. The carcases were emaciated very much, specially in chronic cases, and there were discharges from most of the orifices, froth about the mouth nearly always. The eyes were sunken, and there was mucous or muco-pus about the eyes. There was a great deal of congestion, but it was not always salmon colour, There were rough pieces of epithelium, and erosions were fairly frequent in the nose and under the surface of the tongue. In the thorax the lungs were very seldom affected. The heart was often a little ecchymosed. In the abdomen there was never very much fluid, and there was nothing particular to be seen in the first or second stomach ; the third, however, always contained a lot of hard dry material to which the membrane of the leaves adhered and came off when they tried to remove it. In the fourth stomach the change was very marked. The mucous membrane was very often congested. Sometimes there was a general congestion of the whole organ, perfectly scarlet in colour, sometimes accompanied by necrosis and ulceration. Then in the small intes-

tine they found the same membrane congested, and necrosed. A diphtheritic membrane in little ragged patches, if the disease was anything chronic, having an eel skin appearance, and pigmentary mapping out of the mucous membrane. The Peyers' patches were swollen and covered over with what he might compare to frog spawn. They were found to be necrosed and ulcerated sometimes. In the rectum the mucous membrane was always swollen and congested. The condition of the bowels in some cases closely resembled the effects of arsenical poisoning, and he would not like to pronounce an opinion between a case of arsenical poisoning and a case of rinderpest.

In the discussion which followed,

The CHAIRMAN said the selection of the bile ought to be in the hands of a careful man. He knew that in the selection of lymph, Mr. Rutherford was never satisfied unless he was there himself to select it, and he thought that was his great forte and his great success.

Principal WILLIAMS said the symptoms described by Professor Davis were identical with those which had been observed in this country. He thought Burnden Sanderson found that the initial stage was rather shorter than described by Professor Davis. He thought at that time it was found after inoculation that the incubative period was about 48 hours. There was an elevation of temperature in this country 48 hours after inoculation, although the symptoms did not manifest themselves for six or eight days. With this exception, he thought the description by Professor Davis was almost identical with what had been observed here. There was one thing Professor Davis had not mentioned, which was made very much of by Burnden Sanderson, namely, that the animal emitted a sort of grunt, and that this groaning mechanically produced emphysema of the lungs. He said this was due to a closure of the glottis, and, consequently, the air was forced through the bronchial tubes, rupturing the air vessels in the lungs, and causing emphysema of the lungs, and this air permeated into the connective tissue, and operated as a subcutaneous emphysema. He (Principal Williams) endeavoured to explain this on different grounds. He was sure it was not due to any mechanical obstruction of the respiratory movement. They all knew that a cow would groan and moan, even with only a small stomach-ache. In pleuro-pneumonia continual groaning was one of the characteristic symptoms. Emphysema was due simply to putrefying gases, which caused not only emphysema of the lungs, but of the subcutaneous tissues. He had seen animals in which the whole of the subcutaneous tissues were filled with gases. There were various methods of inoculation and vaccination adopted in this country. The vaccine matter used for the prevention of small-pox was used to prevent rinderpest, and many men made a good lot of money by vaccinating cattle in this way for the prevention of rinderpest, but it was of no more value than the garlic inoculation carried out in South Africa. It was a most remarkable thing that garlic as a vaccine was still made use of even in Scotland. Within the last six or seven years, the people in the St. Mary's Loch district had inoculated their sheep with garlic and other vile things about the inside of the thigh, to try to cure the disease of louping ill. It was remarkable how these things spread all over the world. Garlic had no effect whatever. Judging from the experience of the past, he should have thought that inoculation with serum would have been much more effective than the bile inoculation. He considered that the serum would give immunity when everything else had failed. With regard to the process of defibrination of the blood described by Professor Davis, he pointed out that there must be no coagulation. When they made black puddings in this country, they whisked up the blood, and took out all the fibrine, and they had a blood which did not coagulate. If the apparatus which they had in the Edinburgh slaughter-

house for drying blood, had been brought into operation, this blood might have been made into lozenges, and cut up into doses. If this were carried out, these blood lozenges might have remained for ever without putrefying. They could be conveyed about the country, and in this way a much larger amount of preventive material might have been obtained. He was sure they would all agree that Professor Davis had given them a most interesting paper, which was the result of his own experience.

Mr. RICHARD RUTHERFORD, Edinburgh, said he had been intensely interested in the paper, all the more so because he thought he saw the beginning of the outbreak of rinderpest. When in India in 1865, it was part of his duties to be frequently in the outlying villages around Calcutta, and he was very early made aware that there was a disease quite prevalent in those villages, specially in those villages occupied by tamers. It was quite foreign to any disease he had ever seen before, and in this point he differed from Professor Davis, who said he saw nothing in the symptoms of rinderpest in South Africa to differentiate the disease from any other stomach disease until he came to make his *post-mortems*. He (Mr. Rutherford) confessed that from the very first he saw symptoms in this disease which he could not recognise as belonging to any other disease, and it was this which first of all drew his special attention to it. In that way he supposed he was considered to be the first to draw attention to the fact that rinderpest was found to have made its home in North-west India, that part of the country bordering between India and Southern China. When his attention was first drawn to this virulent disease, he found that it was ravaging the cattle stocks. It so happened that just at that time the Government of India proposed to hold the first exhibition of live stock which had ever been held in the country, and it was proposed to hold that exhibition in the Lieutenant-Governor's grounds, which were to the leeward, so that any infection from the infected villages would be blown directly into the Governor's grounds. He pointed out the extreme danger which was likely to arise from holding that exhibition, but the Governor's word was pledged, and the exhibition was held, with the result that in about three days afterwards some cases were observed. The cattle, instead of being stopped where they were, were allowed to be removed throughout the length and breadth of the country. In a short while the disease had spread into every Presidency where these cattle had come from. He need not tell them that that outbreak resulted in a mortality among the affected animals of something over 95 per cent. In India at that time they had not the advantage of knowing anything at all about inoculation or other preventive measures, and the only measures that they could adopt for its extirpation were severe police measures, and by these police measures the disease was gradually reduced to its former dimensions. The disease spread from India into China, and was conveyed to Egypt by the Abyssinian Expedition, and finally to this country, and in the same manner it had found its way to South Africa by caravans passing north and south throughout the continent. They had serious losses in Abyssinia through the rinderpest, and it had been in the country ever since. It occurred to him that a very important symptom, and one which was rarely absent, was the early superficial twitchings of the body. He did not know whether Professor Davis had found that in South Africa, but it was one of the earliest they noticed in India, and he knew no other disease where, along with dulness, they had that peculiar mucous discharge from the nostrils associated a few hours afterwards with choleraic diarrhœa.

Principal WILLIAMS said that before they left this subject they should pay a compliment to the memory of Professor Gamgee, who in 1865 warned this country that rinderpest would come into it if stringent precautionary measures were not taken to prevent it. He was hooted and scouted by

Professor Dick, and his warning was neglected by the country. Professor Dick declared that rinderpest was just an impaction of the third stomach; founding upon the *post-mortem* appearance in cases where an animal had not taken much fluid, when the contents of the third stomach became dry. The result was that the rinderpest did come, as John Gamgee had predicted, and when it did come, it proved to be something very different from impaction of the third stomach.

Professor DAVIS, in replying to the discussion, said he would be quite prepared to use the serum curatively. It certainly had wonderful curative properties. He remembered seeing one case of a calf which had shown symptoms of having rinderpest, with a discharge from the eyes and nose. They had it at the stage before there was much diarrhœa, and it had the muscular twitchings which was a symptom always seen. This calf had all the symptoms of rinderpest, with a temperature of 107 degrees, and it got 30 c.c. of defibrinated salted blood. A salted animal was an animal that had recovered from the rinderpest, and a fortified one was an animal that had received the rinderpest blood. Next day the temperature had fallen to 104 degrees. It then received another dose of defibrinated blood, and it recovered. He thought that was a good typical case. Of course he had seen a great many get better with the serum, and he had also seen a great many die. His experience had not been a good one with regard to serum. At Kimberley they were not anxious to get the cattle better. They were rather anxious to find out the dose that was sufficient to cure them. They did not want to give the animal a dose of rinderpest blood and then give it 20 c.c. of serum at the same time, and the next day give it some more serum. They wanted to give it one dose, and see if that was sufficient. Of course many animals died in this way which might have been saved if they had gone on giving them more serum, because repeated doses of serum was the way to cure the disease. They got, however, so little serum from the blood drawn from the animals that they had to give as small a dose as possible. Serum would hardly do as an immunising agent, because they injected on one side of the animal 1 c.c. or ½ c.c. of rinderpest blood, and on the other side they injected at the same time 20 c.c. of salted serum. The worst was that, on one hand, their serum might vary in protective properties, and the rinderpest blood which had been injected had all its own way and killed the animal. On the other hand, the serum might be so strong and the rinderpest blood inoculated might be so little virulent that the serum completely did away with it. With regard to subcutaneous emphysema, he might say that he had looked for that many a time, and had asked on several occasions about it, but nobody that he conversed with had ever seen it as a symptom of rinderpest. He had to repeat that the only thing he noticed that would lead one to separate this disease from one of the diseases of the digestive faculties, was the mucous discharge from the nose and eyes.

Mr. RUTHERFORD inquired if any conclusion had been arrived at by those at the Cape as to how the immunity by the use of serum was explained, what change took place?

Professor DAVIS: That is almost as difficult a problem to settle as what life is. The micro-organism has not been found yet.

A vote of thanks was awarded to Professor Davis for his interesting statement.

(*To be continued.*)

GLASGOW VETERINARY COLLEGE V.M.A.

A MEETING was held on Wednesday evening, March 2nd, in the Lecture Room of the College. Mr. John R. McCall, M.R.C.V.S., occupied the chair. The following gentlemen read their essays:—Mr. R. H. Johnson on "Glanders," and Mr. Jas. Macintyre on "Milk Fever." A prolonged discussion followed.

The usual vote of thanks to the Essayists and Chairman terminated the proceedings.

The annual smoking concert in connection with the above was held in Ancell's Restaurant on Thursday evening, March 3rd, Professor Limont, M.A., M.B.C.M., presiding. There were present about 100. The following gentlemen accompanied the Chairman:—Dr. James McI. McCall, Mr. John R. McCall, M.R.C.V.S., Dr. Matthew Martin, Mr. Wm. Grant, Mr. John McConnachie, Mr. Ruttar, and several other well-known city gentlemen.

The CHAIRMAN opened the proceedings by a short speech, in which he gave a few of his "characteristic witty remarks," which were well received by the assembled company.

Several toasts followed. The toasts of "The Queen," proposed by the Chairman, and received with prolonged applause. That of "The Glasgow Veterinary College," coupled with Principal McCall, proposed by Mr. R. H. Johnston, Dr. McCall ably replying in the unavoidable absence of the principal. "The Visitors," proposed by Mr. F. Waddington, responded to by Mr. R. Duff. "The Chairman," proposed by Mr. H. Oliver, Dr. Limont replying in suitable terms.

A varied selection of songs, readings, speeches, etc., were given and a most enjoyable evening was spent.

ROYAL COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE annual meeting was held on Friday, February 25th, at the Great Western Hotel, Reading. From various causes the attendance was small. The President (Mr. T. W. Lepper, Aylesbury), was in the chair, and there were also present:—Mr. G. E. King, V.S., Abingdon; Sir Henry Simpson, Windsor; and Messrs. A. L. Butters, London; W. H. Davidson, Hungerford; W. G. Flanagan, Reading; E. C. Howard, Newbury; J. Sutcliffe Hurndall, Kensington, Hon. Sec.; Jas. F. Simpson, Maidenhead; R. C. Tennant, Eton; R. J. Verney, Oxford; Walter Western, Bracknell; and Henry George Simpson, Windsor, visitor.

The minutes were read and signed.

The Victoria Benevolent Fund.

The meeting proceeded to consider the minutes of the special general meeting held on the 9th July last, the discussion of which was, in November last, deferred to this meeting, and which had reference to the Victoria Benevolent Fund.

The PRESIDENT said he was sure they all considered it necessary to have a good and substantial benevolent fund, but some members, perhaps, thought the new society was somewhat antagonistic to what might be called the Manchester fund. Whether that was so or not, he was hardly in a position to say; but they should have a good fund, whether the two were amalgamated or carried on separately. He invited discussion.

The HON. SEC. read the full minutes of the July meeting; and produced papers which explained the objects of the proposed fund, and contained the

names of the present committee, which it was desired should be extended. That general committee was simply supposed to be representative of the profession, for the sake of securing a certain amount of influence to lead those who it was hoped might join in assisting the carrying out of the object. The intention was, he believed, that when it was fully formed, the general committee would be called, and from it would be elected a working committee. He was not in a position to say whether there was any chance of amalgamating the Victoria Fund with the National.

The PRESIDENT: It seems to me better that we should have one general fund.

Sir H. SIMPSON: No doubt there should be one.

The SECRETARY read a letter which he had received from Mr. Samuel Locke, enclosing copies of revised rules of the National Veterinary Benevolent and Mutual Defence Society, in which he asked him to bring the matter before the members of that Association, feeling sure that it only required to be more generally known to increase the number of members. He had also received from Mr. F. C. Mahon copies of a short statement of the objects of the Victoria Benevolent Fund, a list of officers, etc., from which it appeared that at the committee meeting donations by members present amounting to over £80, and several annual subscriptions were announced. These documents were handed round. There was a great feeling, Mr. Hurndall added, among many that the two societies were not and should not be antagonistic.

Sir H. SIMPSON said he liked to mend old societies if possible, and not start new ones. He should be sorry if they, as an association, committed themselves to what might tend to overturn a society which in its day had done some service.

Mr. WESTERN asked whether, when the National Society was formed, there was a general invitation to the whole profession to join.

The SECRETARY said he was hardly in a position to answer that question. He had recently become a member of the National Society, and should have done so many years before, but at that time the business seemed to be conducted in a rather secret sort of manner which made him reluctant to ask if he could become a member. Some years after he left Liverpool, when Mr. Faulkner was visiting him, he told him plainly his reasons, and Mr. Faulkner rather threw the blame on him, telling him it was his fault that he was not a member, and he became a member about two years ago on Mr. Faulkner's proposition. His own experience was that the National Benevolent Society had not done anything practical to approach the profession and get members to join.

Mr. BUTTERS said when the National Society was started, there was a kind of general suggestion in the journals that the profession should join.

Mr. WESTERN thought there ought to be only one society. He did not think the help of the Society ought to be confined to those members of the profession who contributed towards the fund, because there were necessitous people who had never been in a position to subscribe.

The PRESIDENT said that appeared to be the reason for the starting of that new fund. Until recently the rules of the Manchester Society only allowed them to help subscribers or the widows of subscribers.

Mr. BUTTERS remarked that he had heard it said that the National Society's rules were altered because of the starting of the Victoria Fund, but that was not so. The alteration of rules would have come in force in the ordinary way, even though the Victoria Fund had not been started.

Sir H. SIMPSON said the old society appeared to be financially very strong, having a balance in their defence fund of over £550, and their benevolent account was £3,500 strong; and they said the society had been doing a great amount of good work. He did not wish to throw cold water on the

other, for any aids of that sort must be of great benefit to the profession generally. If they could give expression to an opinion, and send it to both societies, that this Association thought it highly desirable that the two should endeavour to work upon the same lines and amalgamate, and if that was the wish of the meeting, he should be very glad to move a resolution.

The SECRETARY said the Victoria Fund was not an established society yet, but a proposed one.

Sir H. SIMPSON then moved :

> That the Secretary to the Victoria Benevolent Fund be informed that the Royal Counties Veterinary Medical Association, while commending the good work proposed to be done by the Victoria Veterinary Benevolent Fund, trusts it will be possible for the Victoria Veterinary Benevolent Fund and the National Veterinary Benevolent and Mutual Defence Society to be amalgamated.

This was seconded by Mr. KING, supported by Mr. TENNANT, and carried unanimously.

Letters and telegrams of apology were announced from Mr. H. G. Rogers, Mr. W. Wilson, Professor Williams, and Messrs S. Villar, J. P. S. Walker, F. W. Hanks, E. P. Owen, F. W. Wragg, James East, G. A. Lepper, and H. G. Lepper, who were prevented by indisposition and other causes from attending the meeting.

The Dinner to Sir George Brown.

The PRESIDENT read a letter from Mr. R. A. N. Powys, of Camden Town, hon. secretary to the committee organising the complimentary dinner to be given to Professor Sir George Brown, C.B., at the Hotel Métropole, on Friday, March 4th, and said he was sure they all appreciated the high honour which had been conferred by Her Majesty upon Sir George Brown, and through him on the profession. He was sure as many as could do so would attend the dinner.

Sir H. SIMPSON, as a member of the Executive Committee, emphasised the necessity for members to announce their intention of attending the dinner.

On the motion of Mr. HOWARD, seconded by Mr. WESTERN, it was unanimously agreed that the summer meeting of the Association be held at Henley-on-Thames.

Morbid Specimens.

Mr. H. G. SIMPSON showed a section of intussusception of small intestines of an Irish terrier dog, two months old, and said the intestines were completely blocked with worms and mucus. The *post-mortem* symptoms were exactly as described by Professor Newmann in his work on "Parasitology." The same gentleman also showed photographs of a case of purpura hæmorrhagica in a horse, in which both ears had sloughed off, and there were also tremendous sloughings on the neck, the hind quarters, and inside the thighs.

These cases were discussed by the meeting, and on the motion of Mr. KING, seconded by the HON. SECRETARY, Mr. H. G. Simpson was thanked for bringing the specimen and photographs.

PRESIDENTIAL ADDRESS.

By T. W. LEPPER, M.R.C.V.S., Aylesbury.

Gentlemen,— I am not going to inflict upon you a long address, but I must first of all be permitted to say a few words in acknowledgment of the honour you have done me in electing me as President of the Royal Counties

Veterinary Medical Association. I can only hope that the same kind support will be accorded to me during my year of office which you have always been ready to extend to my predecessors.

This has been an eventful year for our society, inasmuch as the National Veterinary Association honoured us by holding its annual meeting in our midst; we were proud indeed to welcome them at Reading, and if our little river entertainment added at all to the enjoyment of the members of our leading society, we are very gratified, and I am sure we all feel that our thanks for this agreeable trip are due in no small measure to our past excellent president, Mr. Wheatley, to our worthy hon. secretary, and all other members who exerted themselves to make the afternoon's entertainment a success.

Our Association has had, I may venture to say, an unchequered career; modestly founded with a few members only in this very room. I am pleased to say the Association has gone on and prospered exceedingly, many of our members are numbered amongst the leaders of our profession, men of whom we may well feel proud and whose example we may wisely endeavour to follow. I, for one, feel grateful to them not only for what they have done for this Society but for their valuable services to the profession at large. I am sure I can truthfully say that our Association has been a great benefit both from a social and scientific point of view, and I hope we may congratulate ourselves that our meetings are tending in some measure towards the elevation of the profession. These meetings enable us to see and know more of one another than we otherwise should do. They also help to remove those elements of friction which in our particular calling are apt sometimes to mar our best endeavours. Then again with reference to scientific advancement, surely we have gained some advance in knowledge from the papers carefully prepared and read to us, and obtained much valuable information from the discussions which have followed.

While speaking on this subject I cannot help regretting the short attendance at our November meetings in London and I sometimes wonder whether two really good meetings in the year would not be better attended and answer our purpose as well as three; on the last occasion, for instance, when my friend Mr. Villar read a most scientific and up-to-date paper on "Tetanus," the attendance of members in point of number was wholly inadequate to the importance of the occasion. It is true that absentees get a chance of reading the report of our proceedings in the periodicals, but still it is uncomplimentary, not to say disheartening, to a man who has taken the care and trouble that Mr. Villar evidently must have done to treat his subject so scientifically and then to find so few members present to appreciate his efforts.

At this point I hope I may be allowed to allude to the high honour which Her Majesty has been graciously pleased to confer upon one of our most able professors, Sir George Brown, an honour which we know was richly deserved and which we all appreciate as tending to raise the status of the profession and enhance the dignity of our calling; to Sir George Brown we offer our most hearty congratulations, and we have also to congratulate Professor Penberthy, a most worthy member of our profession, to whom the Queen has been pleased to present the Jubilee medal.

We, as veterinary surgeons, have much to be thankful for, and perhaps not a little to regret. As country practitioners we must deplore the present state of agriculture, and much as we appreciate the British farmer, who is a good sportsman and a good fellow, many of us have reason to be thankful that we are not entirely dependent upon him for a living.

In these days of competition and advertisement, much of the profit on drugs which ought to be ours goes to the quack medicine vendor, whose name is legion, and he hails not only from our own country but from all parts

of the world. American quack medicine, for instance, is very taking to the eye of the inexperienced, with its many colours and copious directions for treatment, and it says much for the magnanimity of our American cousins that they do not seek to restrict the priceless benefits to be derived from these never failing remedies and confine the sale of them to their own enlightened countrymen.

We do not wish to degrade ourselves by advertising our remedies, it is not possible for us to do so with any self-respect; but at the same time there is no doubt that many thousands of pounds are lost by us every year in this way, and it is all important to know how it can be remedied. This is a difficult question for us to answer. I believe a solution might be found in a well-managed society consisting solely of veterinary surgeons supplying the best drugs and making up such prescriptions as should be approved by a strong committee. This suggestion may not commend itself to many of you, still, for all that I think it worth consideration, and all authorised drug companies managed in a business-like way would at least be a thorn in the side of the advertising quack; and if our clients could be persuaded to use these prescriptions only we should then have the advantage of knowing when called in what drugs had been administered, and so be enabled to treat our patients more successfully.

Now, looking on the brighter side of things, I think I may venture to say there is a great future before us. We no longer feel ourselves far behind other professions in social standing; we are not only holding our own but we are going forward steadily, paving the way to a firm professional status. Our preliminary examination is such now that no man lacking a good education can enter our veterinary profession; the door is shut against ignorance and incapability. I even venture to say, without any disrespect to our sister profession, that at no distant date the average veterinary surgeon will be found quite equal in scientific attainment to his brother of the medical profession.

We are now making rapid strides in surgery, especially in abdominal surgery, which to us is comparatively in its infancy, but you may depend upon it that a few years hence, although we are placed by the condition of our patients and their surroundings at a great disadvantage, there will be few operations performed by the medical profession which we cannot successfully undertake. Then, again, it seems to me that median neurectomy, an operation lately performed so successfully by Professor Hobday, must have a great future. Of course we cannot speak positively of its success, for many of us have not had sufficient experience of it as yet, but it seems to me that it is an operation we country practitioners should make ourselves cognisant of, and be able to perform with ease, and so not be dependent on others for what is, after all, a comparatively simple operation. I have only to mention the use we are making of mallein and tuberculin, and more recently of tetanin serum, to show that we are not altogether behind the times.

As regards medicine I do not think we have advanced to any great extent; I feel sometimes we are perhaps more successful in the treatment of cases of parturient apoplexy, and we appear to have pretty well mastered that troublesome disease actinomycosis, but I am of opinion that in the general treatment of diseases we have not made very marked progress of late years, nor are we likely to do so, I think, in the near future, for it is so seldom we can find in the practice of medicine any drugs that act as a specific in any particular disease. There appears to be so many groups of medicines whose action are so similar that it is not, in my opinion, a great matter of importance in treating disease which we use as long as we have made a correct diagnosis of our case, and this after all is the main point where experience, forethought, and keen observation come in, and where the good practitioner has the advantage.

There are many other subjects which I might touch upon, but I will not weary you. The dinner hour is approaching. The necessities of the body must have attention as well as those of the mind, and I will content myself by thanking you for the kind attention you have given to my few desultory remarks, and by expressing the hope that this society may go on and prosper and lose nothing at my hands during my year of office.

Mr. HURNDALL asked the President to accept their hearty approval and expression of thanks for the address.

Sir H. SIMPSON had very much pleasure in seconding the proposal. It was very gratifying to see another member of the family of Lepper in the honoured position of president of that Society, and he trusted he might have a successful year of office.

The resolution was carried by acclamation; and the President suitably replied.

The Dinner.

After the meeting the members attending dined together at the hotel, the President being in the chair, and the Hon. Secretary in the vice; and they were joined by Dr. Holden, Lieut. Giles Ayres, Royal Berks Yeomanry Cavalry; Messrs. Wm. Ferguson (ex-Mayor of Reading), Stanley Harris, W. Bonny, R. H. Bradley, Albert Wheatley, Sydney H. Slocock, Mitchell, E. K. Deacon, and others. A very elegant repast was placed on the tables.

The toast of "The Queen—God bless Her," having been loyally drunk on the proposition of the President,

The PRESIDENT gave "The Prince and Princess of Wales and other Members of the Royal Family," remarking that the Prince of Wales was a model Englishman, a lover of all sports, and a great supporter of agriculture. Some fortnight ago his Royal Highness had a record sale of shire horses, the lots averaging over 224 guineas, which showed that he did not go in for the business of horse-breeding in any half-hearted sort of way. As to racing, the Prince of Wales had bred and owned a Derby winner; and they all hoped his Persimmon would make as good a sire as he had a racehorse. The Princess of Wales was beloved by all; and as to the rest of the Royal Family they could not wish them better than that they might follow the noble example and good life of Her Majesty the Queen.

Mr. A. L. BUTTERS, proposing "The Navy, Army, and Reserve Forces," said the Navy was well termed our first line of defence, and when we consider our position as an island and the necessity for communicating with the other nations of the world, it was patent that the Navy must be of the very first importance, to enable us to import our food, and to preserve our coasts from the inroads of any enemy. They were all pleased to contribute their mite towards the maintenance and improvement of the Navy. With regard to the Army, captious critics spoke of its being badly manned and armed, and so on, but whenever our soldiers were sent abroad they always did their duty in every part, and proved themselves men of true and sterling worth. It was pleasing to note in every campaign the veterinary profession was well spoken of, not only in regard to the cavalry and artillery, but also in connection with the transport and the Army Service Corps. Soldiers could not fight without food and ammunition, and to get those to the front was very important. Veterinary surgeons had improved the transport to such an extent that in recent campaigns the number of animals which had died through excessive work had been greatly reduced, and the efficiency of that branch of the service consequently very much improved. They sometimes looked upon the Reserve Forces in an easy-going sort of way; but they had very important duties imposed upon them, and it was pleasing to note that they were coming to the front, and improving greatly in drill and efficiency. They

found veterinary surgeons attached to the Yeomanry, and also marching with the Infantry.

Lieut. G. AYRES responded in a humourous speech. Every young man, he said, ought to join some branch of Her Majesty's Service.

Mr. TENNANT, who holds a commission in the Honourable Artillery Company, also spoke to the toast. Every man in England who was physically fit ought to be able to carry arms and shoot with precision.

Mr. BONNY proposed "The Veterinary Profession," observing that his only knowledge of it was from being associated with such gatherings as that. He had had the pleasure of being present in that room on many occasions, and he had the privilege also of attending the very interesting conference of the National Veterinary Association at Reading last summer, which was a very successful gathering. He thought the veterinary profession nowadays got a good deal of blame about the dog muzzling orders. There were many opinions among people who kept dogs about the existence or non-existence of rabies; and he hoped as time went on the profession would find out more about that very difficult disease. A most important question in connection with the profession was that of calf lymph vaccine. He believed it was a fact that the vaccine for all the Army came from Aldershot, under the direct superintendence of a member of the veterinary profession. That spoke volumes for the profession, showing they were fully alive to the necessity of supplying pure lymph for the soldiers and their families. Those who were fond of animals knew what a debt they owed to the veterinary branch of the medical profession. The love of horses and dogs seemed to be bred in the Anglo-Saxon race; and when they saw their favourite in pain it was a great comfort to be able to call in the aid of an efficient veterinary surgeon to alleviate those sufferings. He coupled with the toast the name of Sir Henry Simpson, who had made his mark in Windsor, who was well known to the whole profession, and who had received distinguished honours at the hands of his Queen. He trusted Sir Henry might be spared many years to be present at those festive meetings.

Sir H. SIMPSON said he had very much pleasure in responding for the toast, although he felt that some more worthy member of the profession might have been chosen for that important duty. Mr. Bonny had alluded to that very keen bond of sympathy which existed between the British public and the veterinary profession, inasmuch as the latter were able day by day and hour by hour to minister to the lower animals, many of those lower animals being the kind and affectionate companions and servants of mankind. Mr. Bonny had alluded to other matters in which the profession took its part, and he (Sir Henry) said with all diffidence, not unworthily, alluding to that very important matter of calf lymph, by the use of which mankind was protected from the small-pox. There could be no doubt that if efficient vaccination was carried out, small-pox was almost entirely crushed out. It was perfectly true that the supply of lymph to the British Army, not only in England but all over the world, was in the hands of the veterinary profession. He had had the pleasure of seeing the institute at Aldershot, where the lymph was properly prepared for transmission to the Army all over the world, and he only wished that the veterinary profession was entrusted with the supply of lymph to every human being, for he believed in that case the results would be far more effective than they were at the present moment. As to rabies, the cure or stamping out, rather, of that disease had not been up to the present time a success. He was not the confidential adviser of the Minister of Agriculture, but if he held that enviable position he should advise Mr. Long, directly hunting was over, to muzzle every dog in the United Kingdom for four or five months. The annoyance of the Muzzling Order was that it was applied inefficiently, one district

being muzzled and another left free; but the burning dislike to the Order was more on account of its partiality than to the Order itself. There were certain matters in which the veterinary profession had decidedly achieved success. When he was a young man they had the cattle plague, and the Privy Council—which preceded the Board of Agriculture in handling matters relating to veterinary science, acting on the advice of the veterinary authorities, stamped out the cattle plague, and there had been no reappearance of it. Also foot-and-mouth disease, which was one of the most disastrous diseases, pecuniarily, with regard to stock, had ceased to exist for many years; and pleuro-pneumonia had also gone the same way. As they knew, they had other contagious diseases which were capable of being stamped out, though not cured. One was glanders, in respect of which they had made immense strides. They had found a means of testing animals to see if they really had that disease in a latent stage, and he believed it was not improbable that before very long the Board of Agriculture would see fit to put the mallein test into practical application wherever there was an outbreak of glanders. If that was so, the advice of the veterinary profession would lead to the absolute suppression of glanders in this country. They were troubled still with that very insidious disease, swine fever, which was bad enough. The remedy was a severe one—slaughter, and he trusted that in time they might get rid of swine fever in the same way that they had got rid of the other diseases he had alluded to. Sir Henry proceeded to say that they all felt greatly indebted to Mr. Bonny for the kind way in which he had spoken of the profession. As years went by he saw a more kindly and more considerate feeling shown to the members of that profession, and he thought they had achieved almost the height of their ambition during the present year, when they found the New Year's *Gazette* contained the name of their honoured member, Mr. George Brown, as he then was, in the list of new knights. Professor Sir George Brown was known, by repute, at any rate, to almost every man who owned a horse, a cow, or a pig. He had been the confidential adviser to the Board of Agriculture for many years, and members of the profession felt very much the honour the Queen had conferred upon them all. Before another week was out the members of the profession intended to ask Sir George Brown to accept an invitation to a banquet as their honoured guest, and amongst the public men who intended to honour that gathering with their presence were Earl Spencer, the Minister of Agriculture (Mr. Walter Long), Sir Nigel Kingscote, and other leading agriculturists. In conclusion, the speaker said he felt year by year that the veterinary profession was more esteemed by the British public, and he could only say to his young friends in the profession that they must do all they could to deserve the good will of that public, and then in return they would be rewarded with the success which in nearly all cases resulted from honest application and hard work.

Mr. S. HARRIS, in proposing "Success to the Royal Counties Veterinary Medical Association," expressed the pleasure it gave him to be present, as he had many personal friends in the profession. Mr. Bonny had taken everything out of his mouth, so that he was "fairly pounded."

The PRESIDENT (Mr. Lepper) said, in response, that he had entered the room "in fear and trembling," for he supposed he was the youngest member who had ever had the honour of acting as their president, and he had the special disadvantage of following their friend, Mr. Wheatley, who had done so much for the association. He hoped their association might go on and prosper, and that it might lose nothing at his hands during his year of office.

Mr. JAMES SIMPSON said he had very great pleasure in submitting the next toast, that of "The Medical Profession," because he respected the subject. That must, to some extent, necessarily be a "shoppy" toast, because it was necessary, in order that it might commend itself to them, to

refer somewhat to their own calling and to that of the medical men. He felt sure the time had come when the medical profession had a greater respect for the veterinary profession than they had at one time; he was perfectly certain that at no time had the veterinary profession felt greater respect for the medical profession than at the present. It was well known that at its start the veterinary profession was immensely indebted to the assistance which it obtained from the medical profession. That time had to some extent passed, and they were now capable of running on their own legs; but they were not likely ever to forget the assistance which the medical profession gave to them when they were but a young profession. The veterinary profession could not but be of interest to the medical profession, inasmuch as so many of the diseases which affected animals were communicable to man. Reference had been made to some of the diseases with which they had to deal, and it was not therefore his intention—as it had been originally—to now say anything about them, except in a passing way. It must be admitted by all that the two professions were very much on the same standpoint; for instance, they were all agreed that the phenomena of inflammation in man was precisely the same as in the animals which veterinary surgeons had to attend; and, that being so, they were led up to the argument, or to the assertion, that there was but one pathology. Thence it necessarily followed that the medical man and the veterinary surgeon must in time be almost upon an equality, so far as knowledge of their respective subjects was concerned. Let them consider the disease of tuberculosis, which could be conveyed from man to an animal, and from an animal to man, the same bacillus being responsible for the lesions observed in the two subjects. Taking anthrax, he believed the medical profession admitted indebtedness to experiments made by members of the veterinary profession, although anthrax did not exhibit itself in the same way in human subjects as in animals. Reference had been made to rabies, and with regard to that disease he believed the medical profession were indebted to some extent to the restrictions that had been placed upon dogs. With regard to vaccine, the obtaining of the lymph direct from the calf had been especially alluded to. He was delighted to know that an enlightened Government now did what it used not to do when that Institute was first established—that was to say, they allowed the calves to be bought for that institution, instead of being hired. He maintained that the old system of hiring was wrong, because now, for the expenditure of a few pounds in purchase, the veterinary surgeon in charge of the Institute was enabled to make a *post-mortem* before sending out the vaccine, and so to make absolutely certain that the calf was not the subject of tuberculosis. It might be admitted that a calf at that age was very rarely the subject of tuberculosis, but there was at the same time just the possibility; and their medical friend present would be able to tell them what the result of such a misfortune to the human race might have been. Although they could never hope, with regard to surgery, to be on an equality with the sister profession, veterinarians were making great strides in surgery. When they compared the surroundings of their patients with the surroundings of medical patients, they would readily agree that their difficulties in regard to the opportunities of conducting aseptic surgery were great indeed. He asked them to drink heartily with him the health and prosperity of the medical profession, coupled with the name of Dr. Holden.

Dr. HOLDEN, responding for the kind way in which the toast had been proposed and received, said it was a great pleasure to be there. He must at once dissent from one remark of the proposer in that the veterinary profession was never so much appreciated by the medical profession as now. He thought Sir Astley Cooper appreciated the veterinary profession as much as any man could; and every man who knew anything about it must do the

same. The time when medical men appreciated the difficulties of the veterinary profession was when they were attending infants. A grown-up patient could always help them by answering questions and calling attention to certain parts of the body, but with infants they had to discover what the symptoms were produced by. It had always been his ambition, if he had the opportunity, to go through a course of veterinary surgery, because no doubt it would be of most tremendous value to members of his profession from the point of view of studying symptoms by themselves, without any assistance from the patient. There was no doubt the professions would become more and more allied as time went on. As to tuberculosis, no doubt Parliament would have to consider the advice of both professions together—they could not for a moment work separately. The medical profession had, by attention to drainage and the removal of subsoil water and other things, reduced the death rate from tuberculosis, etc., but slaughter-houses and the food supply of the country must also be looked to, and that could only be done by members of the veterinary profession. As time went on the two professions would be drawn closer together.

Mr. WESTERN gave the toast of "The Visitors," coupled with the name of the ex-mayor of Reading. It was, he observed, chiefly through Mr. Ferguson's instrumentality that they enjoyed the use of the town buildings last summer, and they all felt deeply indebted to him for his kindness. He also thanked those gentlemen who had helped in the musical portion of that evening.

Mr. FERGUSON returned thanks. By virtue of his office of Mayor of Reading last year he had the power of granting all the Halls, and it was a great privilege to him to accord that assistance to their noble profession. That was not the first time by many that visitors had been invited to their hospitable board ; and he assured them also that those who were invited to that delightful river trip last summer, and especially the ladies, would not readily forget it. That Association was one which all men who owned or valued animals must highly appreciate ; and they as laymen felt that they were only doing their duty as Englishmen in supporting so good and noble an Association.

Mr. W. G. FLANAGAN submitted the last toast, "The President and Officers of the R.C.V.M.A." Of their President he could not say much from personal knowledge, but of his family he could say a great deal. His first introduction to the Lepper family was in 1865, when the present President's grandfather was one of his examiners. In 1884, his father, Mr. G. A. Lepper, was the first President of that Association, and in 1892 his brother, Mr. H. G. Lepper, was their President. They would probably none of them see that happen again, that a father and two sons would live to see each other presidents of the same Association. With regard to their Secretary they had found from experience of many years that he was a very able man in that position.

Mr. HURNDALL, who first responded, said his pleasure in rising on that occasion was somewhat mingled with regret, because his colleague Mr. Walker, of Oxford, their esteemed treasurer, was unfortunately unable to be with them in consequence of illness. He could not say Mr. Walker had never missed an occasion of that sort, because it was not his privilege to belong to that Association from its initiation, but during the seven years of his official connection with it, and for one or two years before he had always been present, and he was sure they all regretted his absence that day, and more particularly the cause of it. He (Mr. Hurndall) felt very much the privilege of being an officer of an association of that sort. Its benefits to them as members of the profession were great, not only inasmuch as their meetings served to hold together friendships which probably would not otherwise have existed, but also because they brought them into intimate connection with gentlemen outside the profession who

were clients or friends. Those annual opportunities of meeting together served to bring them very closely together, and to make them feel the value of professional life. Not only so, but they were also brought into connection with the sister profession, and thus they learned to appreciate one another better, and had the opportunity of discussing somewhat the advantages the one profession could bring to bear on the other. The position of an officer of an association of that sort essentially afforded pleasure to one who was disposed to do what he could to fulfil his duties to the best of his ability. He had had the extreme satisfaction now of serving under two members of the family of Lepper, and could assure them nothing had afforded him greater satisfaction than to be brought into the intimate relations of secretary with gentlemen who occupied the presidential chair. The family of Lepper was well known to him long before he entered the veterinary profession, but his connection with that profession had intensified the far more than ordinary feeling of respect he entertained for his friend who now presided over that meeting, and for his esteemed brother and honoured father. He could only say he received that expression of their appreciation, and he desired on behalf of the officers to express his deep thanks to the company for the kind way in which that toast had been proposed and received.

Mr. LEPPER said it was extremely kind of them to couple his name with this toast, and he must thank the speakers for the very kind remarks made towards him and his family.

During the evening excellent songs were sung by Dr. Holden, Messrs. Bonny, Bradley, Western, Giles Ayres, Harris, and Flanagan; Mr. Butters gave able and amusing recitations, and Mr. Deacon (who accompanied) a clever piano solo.

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE annual meeting of the members of this Association took place at the Grand Hotel, Birmingham, on Friday, February 11th, Mr. W. S. Carless (Worcester) presided. Present: Messrs. Hunting, London; Trigger, Newcastle; Blakeway, Parker, Gibson, Malcolm, Taylor, McGill, Birmingham; Hodgkins, Hanley; Green, Dudley; Collett, West Bromwich; Carless, Stafford; Olver, Tamworth; Over, Rugby; Barling, Ross; Mason, Leeds; Gooch, Stamford; Merrick, Northampton; Gibbings, Nottingham; Brook, Handsworth; Gald, Redditch; Pemberton, Bridgnorth; Hobson, Jones, Leicester; Young, Bromsgrove; White, Tenbury; Beddard, Wolverhampton; Burchnall, Loughborough: and H. J. Dawes, West Bromwich, Hon. Sec.

Treasurer's Report and Balance Sheet.

The TREASURER showed the receipts for the past year had amounted to £170 19s. 11d.

Mr. Trigger and the Council.

The HON. SECRETARY drew attention to the fact that Mr. Trigger's period of office as a member of the Council of the Royal College of Veterinary Surgeons expired next May or June, and moved that steps be taken to secure his return.

The PRESIDENT seconded the motion, which was heartily carried.

Election of President.

Mr. BLAKEWAY proposed Mr. H. J. Dawes as President for the ensuing year, and Mr. TRIGGER seconded the motion, which was carried unanimously amid applause.

Mr. DAWES returned thanks.

Mr. J. A. W. DOLLAR then read a very interesting paper on

SOME OF THE PRACTICAL ASPECTS OF HORSE-SHOEING.

Discussion.

Mr. HUNTING, who was requested to open the discussion, said that the most judicious thing to do, after complimenting Mr. Dollar upon the excellence of his paper, would be to refer briefly to one or two points only in the essay, as time would not allow him to follow if all through. He would first allude to the question of the expansion of the foot, which was an extremely interesting theory. It was that which had altered the theories and methods of horse-shoeing a dozen times at the beginning of this century, and made enemies of many good men. Now, they knew from experiments, that there was an expansion; so that settled the theory. They also knew that the expansion amounted to something like the thickness of a sheet of writing paper, and that settled the practice, for they could easily ignore it. The properly fitting shoe showed no trace of any expansion; and the mark on a badly-fitted shoe was due to the shoe being loose on the foot, and not to any movement of the foot itself. He understood the essayist to say, "Don't put your nails beyond the middle of the foot on account of this expansion." If the shoe could be made secure without going beyond the middle of the foot, there seemed no necessity for driving nails into the thinnest part of the wall. Continuing, Mr. Hunting said there was another point of importance, and that was the principle which Mr. Dollar laid down, that the farrier should get the foot proportionate. The farrier was expected to reduce an overgrown foot to one of proper proportions, but he had never yet been able to find in print any guide which would enable him to do it. There appeared to be nothing, except practice and experience, which could enable a man to say when a foot was in proportion, and when it was out of proportion. It was easy to tell the farrier to shorten the toe or lower the heel, but it was remarkable, so far as his own experience went, there was no part of horse-shoeing so badly done as the preparation of the foot for the shoe. Even nowadays, at a shoeing competition, although it was a rare thing to find the foot robbed or over-rasped, it was too common to find it insufficiently prepared. It had been rubbed into the farrier a little too much that he must not cut a foot. It was most essential that he should take sufficient off, because upon what the farrier took off, depended the proportion of the whole foot. The farrier must not get too much into his head about the form and position of the limb. If he would attend to the hoof, and use his common sense, making a level bearing surface, he would be safe. He (Mr. Hunting) had noticed in two shoeing books recently the expression, "Rasp the foot down until you can clearly see the white line, and then you know you have taken enough off." In most cases this indication would show too much had been removed. He knew no written formula which would enable a man to get proportionate feet. Mr. Dollar seemed to object to the toeing knife, but what he (Mr. Hunting) objected to was an abuse of the toeing knife. A skilful man found in the toeing knife a most useful tool; of course he should not take all superfluous horn with it. He ought to leave as much as would be required to give a level surface by the use of the rasp afterwards. Mr. Dollar had emphasised the importance of the farrier observing the manner in which the old shoe had worn, and certainly that was a very great guide. With regard to calkins their value depended very much upon the roads. On the majority of modern roads, or rather upon many modern roads, where asphalte of wood was used calkins were of very little value. For light trotting horses calkins were useless, and one could often get another week's wear out of the shoe by taking the calkins off. He would, perhaps, except the horse doing heavy work on some paved streets.

As regarded "cutting," he did not believe the shoe had anything to do with it in 95 per cent. of cases—an unqualified expression which he made in the hope that some member would challenge it. There was scarcely any horse that did not "cut" behind on its first introduction to work in the town. When a horse did cut itself it was nearly always at the end of a long journey when he was tired, or upon changing from a country to a town life. He should like, in conclusion, to say that he had listened with great pleasure to Mr. Dollar, whose paper, however, offered too much matter for discussion in the time at their disposal. He should also like to compliment Mr. Dollar on the splendid collection of shoes which he had brought with him. He did not believe there were five farriers in the country who could make them equally well if they had a month to do it in.

Mr. TRIGGER fully agreed with Mr. Hunting when he complimented Mr. Dollar on his excellent paper, and particularly upon his possession of such a wonderful set of shoes. The essay was one which admitted of little in the way of argument, but if they could interchange ideas on the subject the result might be generally beneficial. Hr. Hunting had declared that he could not see the use of calkins. To a certain extent he agreed with him, but it was always the unexpected that happened, and in shoeing, as in other matters, one's theories were often upset. He (Mr. Trigger) had such an experience himself, for a horse which he knew went better in shoes diametrically opposed to what he had ordered. Experience, after all, was the best teacher, and thus it was that the farrier got to know by his horses feet exactly how the animal would travel, and how it would not. His own foreman had an extraordinary power of recognising horses by their feet, and if asked to identify a particular animal, he could do so by examining the hoof, just as an ordinary person would adopt more commonplace methods. Some horses would go well in calkins and yet be of little use in ordinary shoes, and there was no doubt that in certain cases of foot lameness calkins were of very great assistance. It assisted the animal by putting him on his toes. With regard to the farrier, he was, as a rule, so afraid of taking too much off the foot that he took off too little, there being a tendency thereby not to get a level surface for the shoe. Professor Dick told them many years ago all they could say about shoeing, and his remarks thereon were still up to date, notwithstanding that they were written a generation ago. Still, the shoeing of to-day was a vast improvement upon the shoeing of, say, ten years ago, a circumstance for which they were indebted to the various agricultural societies and to the registration scheme, giving a stimulus to the men in the shape of competitions for valuable prizes.

Mr. GOOCH considered that nearly every point raised by the essayist was of great practical importance, and he complimented him upon sticking so closely to a subject which offered so many inducements for discussion. He could not quite agree with what Mr. Hunting had said respecting cutting; the latter held that horses did not cut until nearly the end of a long journey, and that the shoe had little to do with it. Now, he (Mr. Gooch) had a horse which would always cut unless he had a pad on, no matter how long or how short a distance he had travelled. He had tried the animal with all kinds of shoes, but it was impossible to prevent him cutting without a pad.

Mr. HUNTING: I always have those sort of animals pole-axed.

Mr. GOOCH, continuing, said that unfortunately he was not rich enough to justify his following Mr. Hunting's example, and moreover, in the case of this particular horse, he would back him to trot any animal which Mr. Hunting might have. With regard to calkins, he thought that they should adapt themselves to the district in which they happened to be located, but there was no doubt that they were very much abused. He agreed that the preparation of the foot was a matter of supreme importance. There

were many men with splendid forges who made the best of shoes, but who had a poor idea of preparing a horse's foot. Some did too little, whilst others did too much. Mr. Trigger's remarks on the improvement in farriery during the last 10 years were very true, and he thought the Farriers Company of London deserved every praise for their endeavours to prevent the suffering which had been caused by reckless shoeing.

Mr. BLAKEWAY very much regretted that time would not permit the members to give to Mr. Dollar's paper the consideration which it undoubtedly deserved. In the matter of shoeing, some people insisted on fitting the shoe to the foot, and others fitted the foot to the shoe. He thought the skilful man should do both, and whoever failed to properly reduce the foot was not doing his duty. In towns the difficulty was to keep enough horn on the foot, and the best thing to do, in his opinion, was to keep the toes short, and the heels high.

Mr. DOLLAR then replied to the discussion, first of all thanking them for the very kind hearing they had given to his paper—a compliment which was all the more noticeable because he felt that he had exceeded the bounds of time which were properly at the disposal of an essayist. He had further to thank them for the exceedingly lenient tone in which the discussion had been conducted. Mr. Hunting had declared that the expansion which occurred in the foot only existed to the extent of the thickness of a sheet of writing paper, and that statement he must contradict. He thought the degree of expansion was very noticeable, and could be perfectly well represented in figures. In some parts of the heel it certainly was 1-16th of an inch.

Mr. HUNTING : I was speaking of the ground bearing surface of the heel.

Mr. DOLLAR said that even there it was a perfectly measurable quantity, and in some cases it even exceeded the figure he had mentioned. It did not need any delicate instrument to measure it, and it was a matter which they could ill afford to overlook. Marking was only seen in cases where the shoe was badly fitting, although in weak feet there was almost invariably a certain amount of marking. By a careful observation of a horse with weak feet and low heels it was quite possible to see a downward movement of the heel when weight was placed on the limb. That, of course, Mr. Hunting might say was not the movement of expansion, but an up and down movement. Well, that was so ; but in most cases there was a movement of the heel shown they got traces not only of vertical movement, but also of a too and fro movement. Therefore, he thought that what he said in his paper was justified, namely, that as a broad and general rule it was not desirable to go further behind the middle of the quarter with one's nails than was absolutely unavoidable. Then Mr. Hunting said that a very good reason why one should not put nails behind the middle of the quarter, was that in so doing they were putting nails into the weakest part of the foot. But it was very often necessary to put nails into the weakest part of the foot, and if that were the rule by which they were always guided they would often be prevented using an exceedingly valuable position for the nails, because they would be told that they must not put nails there. There was a question also of trimming the foot, and he was aware that it was one eminently for the judgment of the farrier. However, the rule which he had down, was one which the farrier would do well to bear in mind. With regard to the toeing knife, it was an instrument which he would do away with altogether, because however skilfully it was used it was a most dangerous weapon. In reference to calkins, he proceeded to show by means of some of the shoes he had brought for inspection, the relative value between them and wedge heels, and concluded by again thanking the company for their indulgence.

On the motion of the PRESIDENT, seconded by Mr. OLVER, a hearty vote of

thanks was accorded to Mr. Dollar for his paper, which, at the request of the meeting, he announced would be published in *The Veterinarian*.

Mr. DOLLAR then exhibited a number of shoes of various patterns, and also exhibited the latest things in thermo-cauteries.

The Next Place of Meeting.

Where to hold the next meeting of the Association was then discussed, and upon the invitation of Mr. Olver it was decided to go to Rugby.

This concluded the business of the meeting.

The Annual Dinner.

Subsequent to the meeting, the annual dinner was held, Mr. W. S. Carless again presiding, and at the conclusion of the repast a short toast list was gone through

SOUTH DURHAM AND NORTH YORKSHIRE VETERINARY MEDICAL ASSOCIATION.

A MEETING was held in the North Eastern Hotel, Darlington, on Friday, December 17th, 1897, Mr. H. H. Roberts in the chair. There were also present Messrs. A. Peele, West Hartlepool; H. Peele, Durham; P. Snaith, Bishop Auckland; J. H. Taylor and Dr. Hern, Darlington; Dr. de Jong, Hartlepool; and W. Awde, Stockton-on-Tees.

The minutes of the previous meeting were taken as read and confirmed, proposed by Mr. A. PEELE, and seconded by H. PEELE.

The SECRETARY informed the meeting that an invitation had been received to attend conference at Leeds, *re* proposed amalgamation scheme, but neither the President nor himself had been able to attend the meeting. In the account issued of the proceedings it had been proposed to fix the annual subscription per member at 2s. 6d. When the subject was discussed by the Association in March, 1896, it was decided to join if its members could be admitted at the annual payment of 5s. No doubt they would have a further opportunity of discussing the matter.

Morbid Specimens.

Mr. H. PEELE brought forward a liver of sheep affected with bacillary caseation. It was a very fine specimen, its history being that the animal was noticed amiss, icterus being present, and was slaughtered.

Mr. H. H. ROBERTS showed a dentigerous cist removed from the front of the ear of a two-year-old filly. His attention had been called to a fistulous wound there, and on removal he thought it was the crown of a tooth.

He also mentioned the case of a pony which started with a high temperature, viz., 105°, and in a few days dropped to normal. Slight swelling appeared over right nostril, accompanied by discharge of a dirty character from the nose. These swellings appeared in other parts of the body, and also on other nostril, and were indicative of purpura hæmorrhagica; but what astonished him most was that the temperature of the animal remained normal all through.

Honorary Associates.—New Member.

Mr. W. HUNTING, F.R.C.V.S., London, and Dr. E. F. de Jong, Hartlepool, were elected honorary associates, and Mr. P. W. Dalling, M.R.C.V.S., Loftus,

was elected a member of the Association, proposed by Mr. SNAITH, seconded by Mr. A. PEELE, and carried unanimously.

Mr. ROBERTS then read his inaugural address.

RABIES.

BY H. PEELE, M.R.C.V.S.

Rabies is defined as an acute specific disease, naturally special to the dog. It is due to the entrance of a virus which manifests its activity in the brain and spinal cord from which the specific symptoms arise.

The history of the disease is very old. It was known to the earliest Greek writers, and some of these appear to have made the disease a special study, describing the symptoms in a very accurate manner. Its treatment is also prescribed for by them, and I would mention one Celsus, about three centuries after Aristotle, who recommended suction of the wound, showing that the disease must have been fairly well understood by the writer. Baths of various kinds were also recommended, also the application of salt and caustics to the wound.

In England there are records of its presence from the earliest times, and proof of this has been found in early Anglo-Saxon manuscripts, which give recipes and other methods for the cure of the malady. Up to the thirteenth century, the literature upon the disease appears to have been very scanty. From this date, however, it has increased, and from references I have made, this has been due to the increase of the disease. From 1750 to 1780, it seems to have been prevalent in London and other parts of England, and orders were issued by the magistrates for restricting the movement of dogs and for the capture of stray dogs. About the years 1869-71, rabies was very prevalent in all parts of the United Kingdom, and in the December number of *The Veterinarian* of 1871, I find recorded a case in a sheep at West Hartlepool, which was attended by my uncle, the late Mr. Henry Peele. The sheep belonged to a farmer named Elstob, and he had lost several. The cause of it was a black retriever which had been observed among the sheep about seven weeks before my uncle was consulted. This animal appears to have travelled some distance, as an outbreak occurred at Sedgefield about the same time, and the same dog had been seen in that neighbourhood. The disease was very prevalent in this county about this date, and was the cause of the entire destruction of the county foxhounds.

Rabies prevails in most parts of the world, although it is said not to have made its appearance in Australia. It is well-known all over the continent of Europe, in India, South America, and Africa. It would appear, however, that some countries are more afflicted with the disease than others, and this country, in particular, about the early middle part of this century was badly infected with the disease.

The Cause.—This part of my subject has given rise to a great deal of controversy. At the 'outset I may say that it is my belief that there is only one cause, and that is a specific virus. I further firmly believe that this is in the form of a specific microbe not yet identified. To take the various causes briefly, I will begin with the supposed spontaneous origin. The chief arguments brought forward by those who support the supposed spontaneous origin are (1) that it has appeared in countries that have hitherto been free, and where its commencement could not be traced to any extraneous source; (2) that rabies appears again after the lapse of many years, and that isolated cases appear in districts widely apart; (3) that at times it assumes an epizootic form and spreads widely, and in districts in which rabid dogs are seen only very occasionally.

Influences of climate and season appear to have nothing to do with the

appearance or absence of the disease. It was thought that it was more a disease of temperate climates, but the fact that it is almost equally prevalent in the tropic and temperate climates is enough to dispose of the idea. It also seems that the time of the year has no influence upon the prevalence of the disease. That portion of the summer to which the name of "dog days" was given was supposed to be the time of the year in which the disease was most prevalent. Statistics have, however, failed to prove this. Improper feeding, influence of sex, age, breed, anger, pain, etc., have all been blamed for the production of rabies, and numerous experiments have been made relative to these supposed causes, and although in many cases the experimental animal went mad, yet it has never been proved that true rabies was produced. Surely a dog or a cat can be mad without necessarily having rabies, and it is easy to imagine that an animal's mind may become deranged by being shut up without food or water, or by being subjected to great pain.

I now come to the most interesting and perhaps the most practical theory of the cause of the disease, namely, the contagion theory. That it is a true contagious and infectious disease there can be little doubt. The virus of rabies has not been identified, but its behaviour when introduced into the body is similar to that of bacteria, whose products have been most carefully studied. The virus is present in the saliva, brain, spinal cord, prerenal capsule, lymph, urine, semen, milk. With regard to the presence of it in the blood there has been some doubt, and experiments are rather conflicting. The probabilities are that it is present in the blood of a rabid animal.

The poison has only a short life outside the animal body under ordinary conditions. In fact, it is said that it is non-virulent after *rigor mortis* has set in. It certainly does not live more than four or five days at the most, that is, when complete putrefaction has set in. It has been found by experiment that the poison will remain virulent if the vehicle, such as the brain, be kept in a sealed tube at a certain temperature. There is little doubt that the saliva of a dog is infectious before he shows symptoms of the disease. It is uncertain as to what course the virus pursues when introduced into the body. Some say that it remains at the seat of injury for some time, and increases in amount. Others say that it passes rapidly to the nerve centres. I am inclined to the latter view, because the application of the cautery immediately after the infliction of the injury appears to have little or no effect in preventing the disease.

The period of incubation is most uncertain, especially in man. A mean average has been struck for most of the lower animals. In the dog, cat, and wild animals it appears to be from three to six weeks. In the ox the average time is about eight weeks. In the sheep and pig about two to three weeks. All these are, however, very uncertain. Instances are given in which the disease did not show itself in an ox until a year after the injury. The period of incubation is shorter in young animals.

In connection with this it is necessary to observe that the liability to infection from the bite at a rabid animal varies in degree. One observer, Renault, experimented upon dogs and herbivorous animals by allowing them to be bitten several times by a rabid animal, and he also inoculated saliva from a rabid dog into different parts of the skin. Out of 99 animals thus inoculated he found that 67 become rabid while the remaining 32 escaped. Again the degree of susceptibility depends largely upon the seat of injury. If it is in a part well protected by hair, or in the case of man by clothing, there is much less likelihood of contracting the disease. The proportions in man are that 16 per cent. become affected if bitten through clothing and 80 per cent. if bitten on the face or hands. A very wide difference. A bite from a rabid wolf, too, is much more likely to produce the disease than that of any other animal.

In the scale of susceptibility, dogs, cats, and wolves hold the first place, then probably man and the pig, next ruminants, and lastly the horse.

The mode of access of the virus is a most interesting point in connection with the disease. All traumatic surfaces are highly dangerous whilst handling rabid animals and materials with which they may have been in contact. The unbroken skin is quite impervious to the entrance of the virus. but the least abrasions, more especially recent ones, are capable of taking up the poison. In those cases where the mere licking of the face by pet dogs is said to have caused rabies, there must have been some abrasion of the skin. It is possible that injected material is nocuous but this has not been conclusively proved.

The symptoms.—A knowledge of the symptoms of rabies is of the most urgent necessity, not only to veterinary surgeons but also to the public. I refer now, more especially to the symptoms exhibited by the dog, since it is, from this animal that most danger arises to the public. It has been stated that wounds inflicted by rabid animals are slow in healing. This has, I believe no foundation in fact. Small wcunds will heal just as quickly as those inflicted by non-rabid animals. The probable reason of this supposition is that there is a tendency to lick and knaw the seat of inoculation, and during the process a wound is made which is taken for the original one.

There are two forms of rabies—The furious form. The dumb or paralytic form. Animals vary as to which form they exhibit. As a rule the dog has the furious form, but this is by no means always the case. The rabbit gives us the best example of the dumb form.

The disease for the purposes of description is divided into three stages: (1) The melancholy stage. (2) The mania, a furious stage. (3) The paralytic, a dnmb stage. There is no sudden line of demarcation between these stages. They seem to gradually pass from one to the other. It is in the dog that these three stages are best marked in a typical case, and I will describe the symptoms in this animal first.

In all cases of rabies the history of the animal is most important. Whether it is a stranger, whether there is any history of having been bitten by any other dog, or whether there is a wound or signs of their having been a wound in any part of the body. The first symptoms of the disease are relative for the most part to the habits of the animal. He becomes dull and uninterested, takes little notice of anything, and has a great idea of getting away from everybody and everything, hides behind furniture, and is somewhat restless, never remaining long in one position. At another moment he will appear just the opposite, will be lively, and show great affection for his owner or people that he knows. There is frequently a tendency to licking of cold things, and objects of which he usually takes little notice will attract his attention, such as threads, sticks, pieces of straw, etc. In these initial stages there is no tendency to bite anything. The expression of the eyes and face is somewhat altered. Gradually the restlessness increases. The animal becomes more inclined to move about. It is still submissive to its master, but when observed it may be seen to be watching an imaginary object for a few moments and then suddenly dart forward and snap. In fact it appears to have hallucinations of every description and will at times appear very angry. During a fit of frenzy, however, it will always answer when called, and the mind is apparently restored to its equilibrium for a short time. It is remarkable in most cases that have been observed through all the stages what influence is possessed by persons that the dog knows well. At no time during the course of the malady does the dog show any fear or have any convulsive fits at the sight of water. Hydrophobia is a wrong name for the disease as applied to the dog. The opposite is the case, as the animal will drink water in quantity and will even

put its head right into water. The idea that the dog is afraid of water or that he will not drink when rabid is a most dangerous one, and too great publicity cannot be given to the fact that the idea is erroneous. As the symptoms increase the appetite becomes depraved to an extraordinary extent. The animal will bite at and tear up anything. Stones, sticks, leather and any substance which it would not look at ordinarily are indiscriminately swallowed. The saliva is not increased in amount in the earlier stages of the disease, in fact it is if anything decreased in amount. It is during this stage that a spasm of the pharynx will occur, giving rise to the idea that the animal has a bone or other foreign body in its throat: One cannot be too careful in handling dogs or cats brought for treatment for bones in the throat especially il there if any history of rabies in the neighbourhood. Vomiting is frequently present in the early stages, the ejected matter being blood-tinged from injury to the pharynx, mucous membrane of the stomach by the foreign bodies which have been swallowed.

After a lapse of two or three days, frequently a much shorter time, the dog becomes more furious. He will have attacks of fearful frenzy, and will attack anything which happens to be in his way. He shows a tendency to wander, and will travel great distances at a good pace, even going out of his way to attack people or other animals. The expression of the face becomes much altered. The eyes are staring, pupils dilated, and they show no fear of anything. All sense of pain is gone; dogs have been known to take hold of a red-hot iron and hang on, inflicting severe burns on themselves without any signs of pain. They will often tear themselves and eat the flesh. In a very short time exhaustion comes on, and the animal will return home after his wanderings. The temperature is highest in the furious stage of the disease, and the respirations are hurried, especially during the paroxysms. The peculiar bark or howl of a rabid dog is noticed most at the commencement of the furious stage. The voice is altered from the first, assuming a husky sound, due to the incipient paralysis of the larynx. The normal bark appears to be lost and gives place to a howl, which is preceded by a series of short husky barks. Another very typical symptom in the dog, also in other animals, is the furious frenzy that is caused at the sight of another of its own species. This is a very useful symptom from a diagnostic point of view, as it appears very early in the course of an attack. Another symptom, which is perhaps marked more in other animals than the dog, is that of increased sexual appetite.

This furious stage lasts, as a rule, three or four days, but sometimes less, owing to the great exhaustion caused by the wandering of the animal. Frequently the poor brute becomes so exhausted as to lie in a ditch or other hidden place, and remain in a state of stupor for some hours, then it again resumes its mad career.

As the furious stage proceeds, symptoms of paralysis appear, mostly in the hind limbs. The gait becomes staggering, the tail hangs limp, and the lower jaw becomes dropped with tongue lolling out. Emaciation has increased rapidly, the eye becomes dull, and there is sometimes strasbismus. Soon the paralysis extends to the fore limbs, and death is not long in ending the scene.

Dumb madness is so-called because the characteristic howl is lost, the paralysis is very marked, and there is little or no tendency to wander about. The lower jaw is dropped, and the tongue, frequently swollen, hangs out and becomes covered with dust. There is a constant drip of saliva from the tongue, but not in any great quantity. The animal is quite unable to swallow, although the thirst is apparently great.

The duration of the disease is about from four to six days. This period varies, but never extends beyond ten days. It must be remembered that during the first and second stages the attacks of fury are paroxysmal, the

paroxysms lasting from 12 to 15 hours. When the paralysis comes on these paroxysms disappear.

The *post-mortem* appearances are mainly referable to the depraved appetite. There is no sign of organic change in any of the organs. Foreign bodies in the stomach with consequent inflammation, inflammation of the pharynx and and larynx, with laceration of the mucous membrane both of the mouth and these parts. The lungs are congested, and there is hæmorrhage in the spleen. The brain is very little altered in appearance. It appears slightly congested.

There are some diseases and conditions which have been confounded with rabies. The chief of these are : Bones in the mouth and throat, and across the anus, worms causing fits, epilepsy, etc.

The symptoms in the other domesticated animals are all relative to the weapons of offence. In the case of the cat its claws as well as teeth are used. The horse bites at anything he can get hold of, and also paws and kicks. The ox, sheep, and goat butt their fellows and any other objects they meet in their frenzy. A very prominent symptom in cattle is the great tenesmus which is nearly always present.

In all these animals the attacks are paroxysmal as in the dog, and the increased sexual appetite is well marked.

Any medicinal treatment is, of course, out of the question. If an animal is certainly rabid, it should be killed at once. If there is any doubt, especially in the case of the dog, the animal should be made quite secure in a cage, and closely watched.

With regard to preventive treatment, there is no doubt that much more can be done, and it is to this that we want to turn all our energies. The inability to identify the virus doubtless retards progress in this direction. When a man is bitten by a rabid animal, there is no doubt that the proper treatment is immediate suction to the wound. If he cannot reach the wound himself, someone else should do it. There is not much danger to the operator, provided that there are no abrasions in the mouth, and also that the material be frequently spat out. The surrounding surface of the wound should be pressed and squeezed as much as possible. The part should then be thoroughly washed with disinfectants and cleansed. After this the cautery may be applied. The actual cautery is undoubtedly the most effectual. Anything may be used from a knitting-needle to a poker, and the tissues, both deeply and round a good surface, should be well cauterised. Instead of the actual cautery, any of the solid or liquid caustics may be used. It seems to have been proved that the mere cauterisation of the wound has little influence on the prevention of the disease. There is no doubt that prompt and thorough surgical interference is beneficial, and has saved many lives.

It cannot be too strongly impressed upon us the necessity of keeping the supposed rabid animal until we are quite satisfied whether rabies is present or not, should any doubt exist.

Any essay on rabies would be quite incomplete without reference to the Pasteur treatment. Pasteur found that when rabies virus was passed through rabbits it grew in strength, and that when passed through monkeys it became attenuated. Pasteur's first step in the preparation of his vaccine was to obtain a strong virus which would kill in a fixed time when injected into an animal. He inoculated a rabbit with virus, and with the virus from this rabbit he inoculated another rabbit, which died sooner than the first. He goes on passing the virus through rabbits till it becomes so strong that it will kill a rabbit in seven days. The brain and spinal cord of this rabbit are taken and put in a jar of dry air and kept at a temperature of 25°C. It is kept at this temperature for thirteen days, and at the end of that time the virus has no effeet whatever when injected into an animal ; it has, in fact, become

so attenuated and weakened that it cannot produce the disease. When a patient is treated at the Pasteur Institute he is first of all vaccinated with an emulsion made from the brain and spinal cord of the rabbit which has been kept for 13 days. The length of time over which the treatment extends is 14 or 15 days, and during this time injections are given of emulsions made in the way described, but which have been kept for a shorter time, until an injection is given prepared from a brain which has been kept for two days only. It is very rarely that injections from a one day old brain are given. It is found that the treatment is not so effectual in people who have been bitten more than nine or ten days.

There is no doubt that this vaccination of Pasteur's is a valuable and a wonderful agent, at the same time there is a great element of danger in it. Unless I were very certain that the dog which had bitten me were rabid, I would not undergo the treatment.

The most effectual preventive treatment for rabies is the muzzle. It has been proved very clearly that muzzling does reduce the number of cases of rabies. A great deal of harm is done by people who ought to know better writing to the papers on the muzzling of dogs. No doubt it is irksome and very inconvenient to the animal, but the majority of dogs soon become used to it. A good deal depends, too, upon the pattern and fit of the muzzle. It should fit the head properly and be well secured round the neck. The muzzle should also be constructed so that water can be freely lapped.

In a district where rabies has appeared a wide reaching Muzzling Order is most necessary. In addition to this a sharp look out should be kept for strange dogs, all of which should be locked up and killed if not claimed. Warnings to the public should be issued on an extensive scale, detailing the symptoms of rabies, more especially the early ones. The duration of the Muzzling Order should certainly not be less than three months.

Carcases of animals dead of rabies should be buried intact, or if possible cremated. Careful disinfection is also needful in all cases.

A good discussion followed and a hearty vote of thanks was proposed to Mr. Peele for his paper by the SECRETARY, seconded by Dr. DE JONG, after which the members adjourned for tea.

W. AWDE, *Hon. Sec.*

HORSE AND CATTLE MEDICINE SUPPLY CO.,

21, HOPE STREET, GLASGOW.

THE Directors of this Company, in presenting you with their Price List of Veterinary Medicines, wish to draw your attention to two important facts.

The quality of each specific is first-class, being compounded from the Purest Drugs obtainable.

The prices are very much cheaper than those charged by Members of the Veterinary profession.

All Medicines are sold with every confidence in their efficacy for the purposes specified, being the results of wide experience with years of study, and the numerous testimonials and repeat orders received from clients who have tried them, is satisfactory evidence in their favour. The Company will at all times be glad to give information and to answer questions gratis to their customers, respecting diseases or ailments amongst Horses and Cattle, by their Staff-Surgeon, who is a Professor of the Royal College of Veterinary Surgeons.

Subjoined is a list of names of well-known firms now using these medicines; it includes some of the largest contractors and business houses in Glasgow which the Directors think speaks for itself.

DINNER TO SIR GEORGE BROWN.

A COMPLIMENTARY dinner was given on March 4th at the Hotel Métropole to Professor Sir George Brown, C.B., the eminent authority on veterinary science, on the occasion of the honour of knighthood being conferred upon him by the Queen. Professor Penberthy, President of the Royal College of Veterinary Surgeons, was in the chair, and among the visitors were Sir Nigel Kingscote, Sir Walter Gilbey, Sir Jacob Wilson, Professor Power, Colonel Duck, Colonel Brown, Mr. Sims Woodhead, Mr. D'Arcy Power, Mr. Elliott, and Mr. A. Spencer

The CHAIRMAN announced that Mr. Walter Long, M.P., had intended to be present, but was detained by his duties in the House of Commons. He read a letter from Mr. Long, who said how sorry he was that he could not be present to testify to his admiration for Sir George Brown's great public services.

In proposing "The health of Professor Sir George Brown, C.B.," Professor Penberthy said that his career was familiar to them, for excepting the first three years of the existence of the Royal College of Veterinary Surgeons the history of that institution was coincident with the history of Sir George Brown. Half a century and more had passed since Sir George graduated at the Royal College of Veterinary Surgeons, his diploma dating from May 5th, 1847. He had been a member of the Council, Vice-President, and President of the College, and he had also received the very special honour in being elected an honorary associate. He referred to his connection with the Royal Agricultural College, Cirencester, and the veterinary department of the Privy Council, and to the fact that on the establishment of the Board of Agriculture he was appointed to the envied position of director of the veterinary department of the Board. After recounting the important services rendered by Sir George Brown in connection with the Royal Agricultural Society and as a member of many departmental committees, he concluded by expressing their feelings of obligation to him for the part he had played in the advancement of veterinary science.

Sir GEORGE BROWN, who met with an enthusiastic reception, said, in acknowledging the toast, that when he received the honour of knighthood he was told in distinct terms that it was conferred upon him in recognition of his professional services and of the position he occupied in the veterinary profession, so that the honour done to him was done to the whole profession. He looked forward to the solution in the future of many of the problems which puzzled them now, and believed that the time would come when the veterinary service would be organised on the same plan as the medical service, and when the veterinary officer of health and the medical officer of health would work hand in hand, the one conserving the health of the nation and the other preserving its wealth in keeping the livestock of the country free from disease.

Sir NIGEL KINGSCOTE proposed the toast of "The Royal College of Veterinary Surgeons," to which the PRESIDENT replied.

Mr. CLEMENT STEPHENSON proposed "The Royal Agricultural Society," and Sir WALTER GILBEY responded.

Professor Bayne and friends contributed a series of well-selected songs, and when the company broke up it was with a unanimous feeling that a pleasant function had been enjoyed without one single hitch, in mark of which an extra toast was given to the honorary secretary, Mr. Powys, who had acted as organiser.

Legal News.

THE POSSESSION OF DISEASED MEAT.

On Feb. 24th the stipendiary magistrate of Bradford was engaged in hearing a very important case. Mr. Albert Rendell, a draper, of the "Trimming Shop," Kirkgate, and Eldon Lodge, Bradford, was charged at the instance of the Bradford Corporation, under Sections 116, 117, and 118 of the Public Health Act of 1875, with having in his possession and intended for sale meat unfit for human food. William Hemmingway, meat inspector, said that on Jan. 27th he inspected certain meat in the meat-store at Eldon Lodge. Part of this meat consisted of the carcases of two sheep dressed for human food in the way in which butchers usually dressed them. One sheep was unfit for food, the meat being soft and wet. He asked Mr. Rendell to let him see the internal organs of both sheep and the skins, but the lungs and heart which were shown him did not belong to the carcase seized but to a sound animal. One lung and a heart were missing and Mr. Rendell gave no explanation of their absence. The skin of the carcase in question was unhealthy. Dr. W. A. Evans, the medical officer of health, gave evidence to the effect that the carcase was quite unsound. In his opinion the animal must have been in a dying condition when killed. Mr. Thomas Collins, M.R.C.V.S., Government inspector of cattle disease for the district, and Mr. John Harrison, a butcher, also gave evidence to the same effect. On the other hand, Mr. William Rendell, the Defendant's Bailiff, the labourer who had killed the sheep, Mr. Charles Drabble, M.R.C.V.S., and Mr. H. Newsholme, M.R.C.V.S, all gave it as their opinion that the meat was quite sound, Mr. Rendell adding that the sheep had no sign of disease while alive. The stipendiary gave judgment on March 1st. He found that the carcase in question had been legally seized, that it was intended for the food of man, and was unfit for food,; but it was not exposed for sale, or deposited for sale, or for preparation for sale. In the case of Mallinson *v.* Carr, Mr. Justice Stephens, Mr. Justice Hawkins agreeing, had stated that exposure for sale was not a necessary ingredient of the offence; knowledge of unfitness for food was immaterial. The defendant would be fined £5 and £4 8s. costs, or one month's imprisonment, but he (the stipendiary) would state a case for a higher court, for it seemed to him that the judgment of Mr. Justice Stephens and Mr. Justice Hawkins would enable an inspector to enter the private larder of any person and seize high or rotten mutton, game, cheese, etc. The point at issue is very important. It seems clear that in this case the meat was unwholesome and was intended for food, whether for the defendant's family or for his assistants at the "Trimming Shop" does not much matter. As to whether Mr. Albert Rendell did not know that the carcase had been dressed or was bad there is the legal dictum, "Qui facit per alium, facit per se"; his servant had killed and dressed the sheep, and as for not knowing, as Mr. Gilbert's *Mikado* observed, "There's not a word about a mistake, or not knowing, or having no notion. . . . That's the slovenly way in which these Acts are drawn." We await the decision of the higher Court with interest; but we may for the present take an ordinary, common-sense view of the matter, and ask, Would anybody take the trouble to dress a carcase in the butcher's usual manner and hang it in his larder unless it were intended for human food? As for the argument about game and cheese, if people like putrefying meat, or cheese that has to be kept in a cage, they are at liberty to eat it, but that is a different matter from diseased meat, or meat that is generally eaten fairly fresh but has been allowed to go putrid before sale.

A CASE OF CRUELTY AT MORECAMBE.

At the Lancaster Petty Sessions James Casson was charged with cruelty to a horse at Morecambe on the 9th of February. The case was chiefly remarkable for the amount of expert evidence called on either side, no less than four veterinary surgeons going into the witness box. Mr. J. T. Sanderson was for the prosecution, and Mr. W. Blackhurst for the defence.

Police Constable Somerville said he was on duty in Pedder Street at 12.30 p.m. on Wednesday, the 9th inst., when he saw the defendant Casson driving two horses in a bus. The near horse was throwing its head up as if in pain. He followed the horse into Back Peddar Street, and on examining it he found a large raw wound about the size of a two-shilling piece on the horse's near shoulder, from which blood and matter were oozing. He called the defendant Casson, and pointed out to him the condition of the horse's shoulder. He told him it was cruel to work a horse in such a state, and ordered him to take it out of the bus. Casson did so, and, when the horse was loosed, witness turned the collar round on its neck, when he found a quantity of blood, matter, and hair on that part of the collar which had been pressing on the wound He then took the horse to the police station, where it was examined by the inspector, and afterwards saw it to the stable and took possession of the collar produced. He told Casson he would be reported. Casson replied, "Well, I have my work to do."

James Robertson, M.R.C.V.S., said he was called by the police to inspect the horse on the Wednesday evenlng. He examined the horse in Mr. Cryer's stable, and found a raw wound almost two inches long by an inch wide. The skin was considerably swollen, and the horse was very tender. He afterwards saw the collar at the police station. He recognised the collar produced, and the mark. The horse was unfit to work in that collar, and it would be cruel to work it. He should think the wound had been in that state two days.

Cross-examined: He should infer that the wound was not above two days old because it had not begun to suppurate.

Inspector Hodgson and P.S. Findlay gave corroborative evidence, the former saying that the collar was besmeared with blood and matter.

Mr. Blackhurst, for the defence, said that, if the wound had been caused by the collar whilst the horse was at work, and if the defendant was ignorant of it, he submitted that no offence had been committed.

Frederick Thompson, M.R.C.V.S., practising in Morecambe, said that he was called in to examine the horse at ten minutes to one on Wednesday, the 9th inst., and examined it with a magnifying glass, but could see neither blood nor matter. The wound had been there from one to three hours. It was his opinion that the horse was all right when it went to work in the morning.

Thomas Fowler Hutchinson said he was a veterinary surgeon of 33 years' standing. He had been called in by Mr. Thompson on the following Monday. He believed the wound was a recent one. If the wound had been a deep one, and had had matter issuing from it on the Wednesday, it could not have healed by the following Monday when he saw it.

Arthur Wilberforce Mason, F.R.C.V.S., practising in Leeds, said he knew Mr. Thompson. He examined the horse on the 19th, ten days after the alleged offence was committed. He corroborated the testimony of the previous witnesses.

The Bench inflicted a penalty of 5s. and costs, with the usual veterinary surgeon's fee.

A second case on the same day was then taken against Casson, and Frederick Thompson, M.R.C.V.S., was summoned for counselling cruelty. It appeared the police saw the horse at work later in the day, with a fresh padded collar on. When asked for an explanation the defendant Casson said,

"Thompson said it is fit to work, and I have put these pads on to prevent cruelty."—P.C. Somerville was called, but the Chairman, after conversing with his brother magistrates, interposed, and at the suggestion of the Bench the second cases were withdrawn, the Chairman remarking that he was sure the prosecution did not wish to be vindictive.—Mr. Sanderson: Certainly not.

AN UNSOUND COW.

On the 31st December last, Sheriff Campion issued his interlocutor in an action raised at the instance of Mr. James Pratt, farmer, Burtensett, near Hawes, Yorkshire, against Mr. Robert Black, innkeeper, Bentpath Hotel, Langholm, in which he concluded for (1) £17, being price of an alleged unsound cow which belonged to defender, and was purchased at Messrs. Hetherington's Auction Mart, Carlisle, and (2) the sum of 10s. 6d., which he paid for the examination of the cow, and legal interest upon both sums from the 27th February, 1897, till payment. Sheriff Campion decided in favour of the pursuer, finding him entitled to repayment of £17 10s. 6d., with expenses. The case was appealed to Sheriff-Principal Smith, who has just issued his interlocutor, upholding the decision of Sheriff Campion, and dismissing the appeal with expenses. The following is the Sheriff's note:—

Note.—The question in this case is whether the cow sold by the defender to the pursuer on 27th February last, was at that date in the condition described in the fourth article applicable to home cattle in the conditions of sale (No. 60 process), which provides that the purchaser may reject any dairy cow which does not give milk from every quarter of her udder. The pursuer, whose evidence the Sheriff-Substitute has accepted as completely reliable, and who seems to be a man of considerable practical experience in the buying and selling of cattle, states positively that, within a quarter of an hour after the time of sale, he examined the cow at the mart, and found that she had a faulty or deaf teat. In view of the fact that the defender admits that the cow was never examined by him between the time of the sale and the time when she was put dry about a month previously, in January, 1897, it would be difficult to reject the pursuer's testimony upon this point, even if unconfirmed. But it is also proved that the pursuer, immediately after discovering the fault in the cow, having himself to leave the Hetherington mart for another auction mart, sent his man Quinn to tell the Hetherington Company that he had found the cow faulty in one teat, and that he was leaving the cow at the mart in consequence. It is true that Quinn, being busy loading cattle, did not deliver this message until Monday, March 1st, and then did not deliver it quite correctly; but it cannot be doubted that the only reason why the pursuer left the cow at the mart, was that he had discovered a fault in her. It is proved by the evidence of the yardsman, Johnstone, that when the cow calved on the 4th of March, one of her teats was wrong. The pursuer apparently gave personally a verbal intimation of his objection to the Mart Company on the 6th of March, and on the 2nd of March he had written a letter to the Mart Company (as to the date of receipt of which there is some doubt), in which he stated that the cow was unsound, and only gave milk from three teats. The highly experienced veterinary surgeon who was asked by the pursuer to examine the cow on the 19th and 20th of March, entirely confirms the evidence of the pursuer to the effect that there was an obstruction in one of the teats, which was probably the result of injury. In this state of the direct evidence as to matter of fact I am unable to attach much importance to the evidence of Mr. Hewison, the veterinary surgeon examined

for the defender, and who seems to have been called in to examine the cow on the 7th of March by Johnstone, the yardsman of the Mart Company. He states the cow was suffering from acute inflammation of one quarter of the udder, and his opinion is that this inflammation must necessarily have originated within a week of the date of his first inspection, which would mean the day following the sale; and he also states that the hardening and closing of the teat gradually developed while he was attending the animal. I do not, of course, impugn in the slightest degree the good faith of Mr. Hewison's evidence, but I do not think it can be accepted as sufficient to establish against the other evidence in the case that there was no fault in the cow's teat at the date of sale, whether that fault was caused by acute or chronic inflammation or any other cause. I may add that the defender's conduct does not suggest any great confidence in the statement that the cow was certainly free from fault at the date of sale. He offered a sum of 10s. to the yardsman, Johnstone, for the purpose of securing his good offices in the matter. He offers £5 to the pursuer to settle the dispute; on the 20th of March he himself employs Mr. Bell (who has just examined the cow for the pursuer) to attend the cow in his interest, and it is, therefore, not surprising that he gave the impression to several of the witnesses examined that he had taken back the cow.

INTERESTING CASE FOR SHOEING SMITHS.

In the Birmingham County Court, before Mr. W. Amphlett (Deputy-Judge), an action was brought by Messrs. E. and J. Twist, shoeing smiths, of Lawley Street, against Ralph Adams, haulier, Alum Rock Road, to recover £5 for shoeing horses. The claim was admitted, but defendant counter-claimed for £40 14s. 6d. damages alleged to have been caused by the careless shoeing of two of the defendant's horses by the plaintiffs' servants.—Mr. T. G. Tyler (instructed by the City of Birmingham and District Master Shoeing Smiths' Protection Association, whose secretary, Mr. Payne, watched the case) appeared for the plaintiffs, and Mr. S. Dorsett (instructed by Messrs. East and Smith) for the defendant.—The defendant and several witnesses, including Mr. Packman, Mr. Sperring, and Mr. H. M. Stanley, veterinary surgeons, were called as witnesses in support of the defendant's case, which was that a brown horse was pricked in the shoeing, and that blood-poisoning was set up, and the horse died. Another horse was also alleged to have been pricked in the shoeing, but this animal recovered. The damages claimed were made up of the value of the horse which died and of expenses for veterinary attendance, keep of the horses while sick, &c.—Each of the witnesses for the defendant was cross-examined, and admitted that it is impossible to avoid pricking a horse at times, and that the mere fact that a horse pricked in the shoeing was of itself no evidence of negligence, and Mr. James Owen, a shoeing smith, and Mr. H. M. Stanley, two of the defendant's witnesses, admitted that it was quite possible for the alleged injury to take place without the slightest want of care on the part of the shoeing smith.—At the conclusion of the plaintiffs' case Mr. Tyler submitted that there was no evidence of negligence or carelessness on the part of the plaintiff's servant.—The Deputy-Judge held that shoeing was in itself no evidence of negligence, and the defendant's counter-claim, with costs to the plaintiff.—*Birmingham Daily Gazette.*

[The finding was for defendants.—Ed.]

INFLUENCE OF SPAYING ON MILK PRODUCTION.

At a meeting of the Société Nationale d'Agriculture, as reported in the *Journal Officiel* of the French Republic, M. Chauveau, on behalf of M. Flocard, of Geneva, presented a report on the castration of milch cows. Between 1879 and 1888 M. Flocard performed operations on 1,950 beasts, only nine of which had fatal consequences, that is to say, 5 per 1,000. Since that time M. Flocard, by making use of the discoveries of Pasteur, and always rigorously observing the rules of aseptics and antiseptics in performing operations, has been able in the period between October, 1888, and the end of November, 1897, to practise 2,505 ovariotomies without a single accident. This operation modifies the character of the animals, their form, and their nutritive capacities. The animal loses the life of the species, the activity of which is diverted towards the individual life, which then becomes all-powerful; the female after the operation is more docile, fattens quicker, and gives more milk and of better quality, and she is no longer susceptible to the attacks of a series of maladies caused by the defective working of the genital organs. The most remarkable result of ovariotomy is to lengthen the period of the lactic secretion, at a rate of yield equal to that of calving, to an average of 20 to 24 months. A cow yields in the year after the operation at least from 1,300 to 1,400 litres (365 gallons about) more than she would if no operation had taken place, all other things being equal, that is equal care and nourishment. It is observable, too, that the milk undergoes a change in quality; it is richer, especially in butyrous matters, and, moreover, its composition remains constant, and is no longer influenced by œstrum, gestation, or calving, which is important in regard to the sale of milk, and especially when the milk is intended to be made into butter or cheese. The advantage is equally great from the standpoint of meat and fattening. A castrated cow fattens more readily; its flesh is better, is heavy, rosy, and streaked with fat, and its juice is abundant and rich. At the Geneva competition in 1896 a special class was reserved for castrated beasts. It was proved, by observations made in the slaughter-houses there, that the net weight relatively to the living weight is about 5 to 6 per cent. higher in castrated cows than in those fattened in the state of gestation.

This recalls the fact that about the middle of the present century, one Charlier, a French veterinary surgeon, was the first to effect castrations on a large scale, which succeeded very well. In washing his instruments he always used boiling water, thereby practising asepsis without knowing it, and to that fact, no doubt, he owed a success in his operations which was denied to other practitioners. So it came about that for many years ovariotomy was neglected, despite its advantages, as evinced in the rare cases in which it was performed. These advantages consist in the lengthening of the period of abundant lactation to two years, and sometimes, in certain cows, to three and four years; greater facility in fattening, and a larger net return in meat. According to one authority, in the Meaux arrondissement, castration performed upon fifty cows was very successful in its results. The same person practised it in hundreds of cases without accident. A high authority has declared that in the present day, with the antiseptic method, there is no danger in castration, and he has practised it on fillies with success, whereas formerly it was always attended with fatal consequences. Twenty-five years ago a veterinary surgeon of Remiremont castrated every year from eighty to one hundred cows in his arrondissement, and succeeded, thanks to the extreme cleanliness which reigns in that milk-producing region. Ordinarily he performed on cows after their second or third calving. He obtained on the average two and sometimes three years' continuous and even lactation, and he also noted an improvement as regards flesh production. A case is cited of a cow of the Swiss breed whose milk production was prolonged by it to three years, and the amount of meat yielded was much greater than in cows not castrated.

TUBERCULOSIS AND MILK.

Important Decisions of Carlisle Health Committee.

A SPECIAL MEETING of the Carlisle Health Committee was held at the Town Hall on February 26th for the consideration of the Medical Officer's report with regard to the spread of tuberculosis by milk. Mr. Wheatley presided, and said the medical officer had done a great public service in drawing attention to the prevalence of this disease and its vital character to our city and county; and it was their immediate duty to take into consideration such steps as would give effect to his proposals. They were contained in very few lines. He thought it became their duty to urge upon the representatives of the city in the County Council the pressing importance of assisting them in this matter.

Mr. FERGUSON referred to a communication in *The Patriot* from Canon Rawnsley on the subject. He evidently meant to call the attention of the county to it. When the County Council elections were over, the representatives of the city ought to be called together and join in some common action.—The Chairman said it had often struck him that there was a want of combined action among the city representatives.

Mr. HODSON (acting clerk) read from Dr. Walker's letter offering to analyse samples of milk for the bacilli, at the ordinary fee of 10s. 6d. each sample.

The CHAIRMAN said examining milk for bacilli supplied within our own walls was of very little use. The chief supply came from the country.

The MEDICAL OFFICER: It is more important in the case of town dairies than in the country dairies.

The CHAIRMAN said precautions had for years been taken to prevent absolutely insanitary conditions in cows here.

The INSPECTOR said the cowsheds were in a fairly sanitary condition, but overcrowding was extensive. There was only one shed that was not overcrowded. He measured them this week.

The CHAIRMAN: You should serve notice on them.

The INSPECTOR said there were about 35 sheds and about 200 cows. In one case a shed for two cows was occupied by five. There should be 800 cubic feet of air space for each cow.

The CLERK said there was power to appoint a veterinary inspector.

Mr. FERGUSON said it would be well to issue a handbill telling cowkeepers that the regulations as to space would be enforced.

The INSPECTOR said they were all supplied with a copy of the regulations.

The MAYOR said time should be allowed, as they would have to enlarge their sheds or dispose of some cows.

The INSPECTOR said he was prepared to carry out the Act, but there would be a lot of opposition.

Mr. ATKINSON said his opinion was that the cowsheds in the city would compare favourably with those in the country.

The CHAIRMAN said Dr. Brown pointed out that the air space should be larger in proportion in the town than in the country.

The MEDICAL OFFICER said some sheds were enough to make one quite sick, they were like an oven.

Mr. ATKINSON said he was sure the cows were as well kept and fed as in the country.

Mr. COLLIN said the natural life of a cow was in the open air, and not to be cooped up in a room.

Mr. FERGUSON said there were places in Carlisle where they sent their cattle out regularly.

The MEDICAL OFFICER said his first recommendation was the most important one—that there should be veterinary supervision over cattle, with special reference to tubercular disease of the udder. He should inspect them once every three weeks.

Mr. COLLIN: That means another corporation official.

Mr. ATKINSON said it was a farce altogether.

The MEDICAL OFFICER said the disease could be found out if it occurred in the udder, and it was chiefly in such cases that it was transmitted to the milk. If it was confined to the lungs the milk would be fairly safe.

Mr. RITSON said he had often been struck with the miserable condition of cowsheds in the country; there was scarcely breathing room in some, and he had seen cattle perspire fearfully for want of air space. The byres in Carlisle had been much improved since the inspector came. He did not wonder at cattle coming into town affected with these diseases.

The CHAIRMAN: What about the question of marts?

The MEDICAL OFFICER: That has nothing to do with the milk.

Mr. COLLIN: Do you think consumption is largely transmitted to human beings?

The MEDICAL OFFICER: I am sure it is frequently transmitted—the kind of consumption you get in the bowels of children. You get it on a large scale in great towns.

Mr. FERGUSON moved—

> That all dairy cattle from which milk is derived for distribution in the Carlisle Urban Sanitary District be subjected to regular veterinary inspection.

The disease, he said, was most common among children, who could not protect themselves, and they neglected their duty if they did not take strong measures.

Mr. A. THOMPSON seconded the motion, which was agreed to.

The MAYOR then moved that Messrs. Carlisle and Bell, V.S., Mr. Hewson, V.S., and Mr. Dawson, V.S., be asked on what terms they would make an inspection for twelve months.

The CLERK said these veterinarians were the three appointed under the Contagious Diseases (Animals) Act.

This was seconded and agreed to.

Mr. ATKINSON said they were letting the people in the country go free.

Mr. FERGUSON said he would see that it came before the County Council when they were elected.

The INSPECTOR said the Rural District Council had regulations similar to the city, buf their limit of cubic space was different—600 to 1,000 cubic feet.

The Medical Officer's second suggestion—"That a more rigid enforcement of the city bye-laws as to cubic space of the Carlisle cowsheds be carried out," was then agreed to on the motion of Mr. FERGUSON, seconded by Mr. COLLIN; and the authority also adopted the third suggestion—"That as an auxiliary measure, the Carlisle Urban District Council extend the provisions of the Infectious Diseases (Notification) Act to pulmonary phthisis, tubercular meningitis, and tabes mesenterica."

The CHAIRMAN moved that the Medical Officer be authorised to send milk for analysis to the analyst where he considered it necessary.

Mr. THOMPSON seconded the motion, which was agreed to.

The MEDICAL OFFICER said if the authority would provide him with the necessary apparatus, he could do some of the work himself. It would not cost more than about £5; and it would save time.

It was agreed to purchase what was required.—*East Cumberland News.*

DEATH ON THE WING.

The Tsetse Fly.

In the course of the brilliant classification of unicellular organisms with which Professor Ray Lankester has occupied the last two lectures at the Royal Institution—a classification whose orders, owing to the logical distinctness with which they are set out, and the thoughtful deliberation with which they are illustrated, have a singular faculty of impressing themselves on the mind—he came on Tuesday to a sub-division of the Carticata, called Herpetomonas. The Herpetomonas, which belong to the Lisso-flagellata, and are allied to the simpler monas, are themselves among the simplest and the smallest living things. They are little bags of protoplasm, with a littler mouth and a tiny lash of protoplasm extending from them, with which they whip any food that may be going into their mouths. They are called herpetomonas because of the serpent-like movement of their tiny bodies, which are not much more than the six-thousandth part of an inch in length. They were first found years ago in the blood of some rats in India, then they were found in the blood of rats in London—but not in the blood of all rats. One may examine 50 rats before coming to one which is a member of a colony whose blood contains the herpetomonas—from which we may infer that it is only in some colonies that this tiny organism has through generations found a home without doing injury to its hosts. But a year or two ago the herpetomonas was discovered under far more sensational circumstances, for in the course of an investigation by Surgeon-Major Bruce into the causes of the tsetse fly fever, it was found in the blood of animals which had been infected. Furthermore, although the belief was general throughout Africa that this fatal fever which attacks horses and dogs, mules and oxen, was caused by the bite of the tsetse fly, yet fresh specimens of the tsetse fly, flies which had never been allowed to come into contact with animals, were discovered to be innocuous. There were two beliefs then possible of the causes of the tsetse fly disease—the Nagana fever, as the natives call it—one that it was not caused by the tsetse fly at all, but by some form of vegetation in the districts which harboured the fly; and the other belief that the tsetse fly merely carried the disease from one animal to another. The second belief is the right one. It has been found that if the blood of an infected animal—and this blood is always crowded with these dreadful little herpetomonas to such an extent, that they outnumber the corpuscles of the blood almost by two to one—is injected into the veins of another animal, then the second will exhibit all the symptoms of the disease, and its blood also will become thronged with the wriggling herpetomonas. The herpetomonas and the herpetomonas alone is the cause of the disease. Professor Ray Lankester believes that when in the blood, it creates and disperses about itself some form of poison; but so minute are the quantities of this poison, that its nature has not yet been ascertained; and it has not been found possible to administer any anti-toxin treatment to the blood which will educate the blood up to the point of resisting this poison. Yet it is possible that such an anti-toxin exists, for the starting cause of the tsetse fly's virulent ability is that in the blood of some of the wild beasts of Africa, the herpetomonas has found a home as it has found a home in the blood of rats. These animals through generations have become immune from its poison, and are not disturbed by it. It is from these animals that the tsetse fly conveys the herpetomonas which is so fatal to domesticated animals, though—another of its anomalies—it has no effect on human beings.—*Daily Graphic, February 26th*, 1898.

REMEDIES WORTH TRYING IN ECZEMATOUS ERUPTIONS OF DOGS.

ICHTHYOL ointment, 2 to 5 per cent., with equal parts of lanolin and cosmoline.

Ichthyol tar-soap moistened and rubbed on the itching parts and allowed to dry.

Permanganate of potash solution of the strength of 1 to 3 per cent. where the dogs are peculiarly irritable.

Where the surfaces are widespread and moist, dust with equal parts of talcum, lycopodium, and boric acid.

For use in the house on pet dogs that have the range of the parlour and lounge on the rugs and furniture, try a 15 per cent. solution of hyposulphite of soda.

Creoline baths of the strength of 5 per cent. will give very great relief for many hours.

In the finer toy varieties, try a 1 per cent. solution of trikresol; ten grains of boric acid to the ounce of this solution adds to its efficacy in some cases.

Chloro-naphtholeum, two ounces to the gallon of water, is a useful medicated bath for the large varieties of dogs, and is destructive to parasitic forms of life.

Trikresol soap is far safer and better than carbolic acid soap for bath purposes when washing dogs frequently.

Do not use bichloride of mercury solutions in moist eczema.

Starch and oxide of zinc may be used separately or in combination as a dusting-powder alone, or after any of the watery solutions, and tend to hasten healing of broken or denuded parts.

In chronic and long-standing cases, where fissures of the skin have formed and the animal tends to bite the affected parts, causing bleeding, touch them a few times with Monsell's solution of iron, and then use one of the powders.

For softening the parts, equal portions of lanolin and pure cosmoline, with ten grains of boric acid, will be found useful and cleansing.—*Journal of Comparative Medicine* (*U.S.A.*)

RINDERPEST: ITS PATHOLOGY AND THE MEANS USED TO COMBAT ITS INVASION OF S. AFRICA.

BY GEORGE TURNER, M.B. (CANTAB), M.R.C.S., D.P.H.

Medical Officer of Health for the Colony of the Cape of Good Hope; being the Annual Presidential Address to the Cape Town Br. of the British Medical Association, delivered by the Vice-President.

(*Continued from page* 224.)

This experiment led me to suspect that the blood itself had a certain restraining action on the organism, and I made two further experiments.

I shaved the ear of two animals over the aural vein; then, by means of a triangular flap, I laid bare the vein, and into it introduced the needle of a small hypodermic syringe. A plug of cotton wool impregnated with bichloride of mercury was pressed on the needle at its entry into the vein. The syringe was filled with normal salt. This was pumped in, and then 0·1 c.c. of virulent blood was introduced into the syringe by means of a pipette. This also was pumped in, and the syringe subsequently washed out twice with

sterile salt solution, the whole well pressed up into the vein, and the wound washed with perchloride of mercury and stiched up. Two animals were experimented upon. One struggled when the blood was being injected, the needle escaped from the vein, and a few drops of the blood and salt came on to the cellular tissue.

The fate of these two beasts was very different. That in which the blood touched the celluiar tissue was attacked in due course and died; and other, in which the blood went entirely into the circulation, escaped. Nevertheless, the blood can only have a partially restraining action, since the virus is found in it in a state of great activity.

The animal which escaped the intravenous injection of a small dose of virulent blood was not naturally immune, because when I injected as much as 10 c.c. into the jugular, it took the disease and died. These experiments must be repeated.

I concluded from the experiments mentioned that the bile contained an organism, that the active immunising property of the bile is due to the action of this organism, and, lastly, that it is modified, and does not possess full virulence.

Experiments show that bile in the early stage of the disease has little protective power.

The bile does not appear to possess any immunising properties during the first three or four days of the disease, and Professor Koch recommended that it should be taken on or about the seventh day.

Another recommendation was that the bile selected should be of a bright green colour, showing, when shaken, a white froth, and should be without smell.

Undoubtedly, a bile presenting these characteristics is usually efficient, but it is by no means always the case. On the other hand, biles of any colour are frequently quite as useful, provided they are clear, do not smell unpleasantly, and do not obviously contain a very large proportion of blood.

Koch's recommendation was made rather to prevent the use of decomposed biles, which, giving rise to abscesses, often failed to immunise, than to any belief that the colour was really material. In fact, he himself immunised animals with biles of various shades of colour.

These green biles are very frequently absolutely free from micro-organisms of any kind, which can be seen by the lens or cultivated in the incubator. If, therefore, they are carefully taken, they will remain good for a comparatively long period.

The brown biles generally contain organisms; in fact, a bile of a good green colour rapidly loses this character under the influence of decomposition, and as, especially at first, bile was obtained from animals dead on the veld, the colour was of considerable importance.

Much has been said about the difficulty of obtaining a reasonable quantity of green bile for inoculation. Men relate stories of opening many animals before obtaining one suitable gall, but these generally refer to animals dead on the veld. I am aware that it has been asserted that at least seven animals were required to be sent to the gall stations to provide sufficient gall to immunise 100 oxen. In my opinion, this loss of life was quite unnecessary. If the animals destined to furnish gall were infected with a moderate dose of rinderpest blood, such as 1 c.c., and if, instead of counting from the day of injection, the temperatures were taken and the animals killed at the end of the sixth day of high temperature, very few biles were nseless, and not more than three or four animals were required per cent. If, on the other hand, they were allowed to fall into collapse, then indeed many of the galls were unfit for use.

Dr. Hutcheon and the officers of the veterinary service cannot be held

responsible for the loss of animal life mentioned. Dr. Hutcheon carried out religiously the directions dictated by Dr. Koch and written out by me.

I have stated that all green galls are not protective, and, when Koch's remedy was the only one upon which we could depend, this was a matter of much importance, and it was desirable to discover some test capable of of readily deciding the point. I therefore examined all the galls taken at the station with this object in view, and I believe that the spectroscope can answer this question.

Thus, if any normal green gall be examined spectroscopically, no absorption bands whatever are seen; on the other hand, nearly all rinderpest galls present well-marked bands.

These bands are, in my opinion, all derived from the blood. For instance, on the diagram before you, the first spectrum gives two bands, which, by measurement and by actual comparison with diluted blood, proved to be in the position of the well known oxyhæmoglobin absorption bands. Moreover, when treated with Stokes's reagent, the second spectrum was obtained, which is that of the single absorption band of hæmoglobin such as is met with in venous blood.

The presence of these two bands unaccompanied by any others is not usual; generally there is only one band present, situated in the red spectrum. The nature of this band is open to doubt, and I can only offer a guarded opinion.

Take the third spectrum; it shows three absorption bands: two evidently those of arterial blood, and a third near the red end of the field; this, by its position, corresponds to the band characteristic of methæmaglobin.

More frequently, however, there is only one band present, and this band is then, as far as my experience goes, in the position of the C line, nearer the red end of the scale than the ordinary methæmaglobin band.

Those galls which present these bands all possess the immunising property, and those in which they are absent do not.

Had the gall been of the prime importance it once was, it would have been worth while to devote more time to ascertaining exactly the nature of the colouring substance which gives this absorption band.

My opinion is that the band is that of methæmaglobin, altered by the menstruum in which it is dissolved.

Probably the varying power shown by different samples of gall is in great part due to the very different degrees of concentration of the bile.

From the examination of 38 samples, I find that the rinderpest bile has an average density of 1023·2, but that it varies within very wide limits. The lowest was 1015·2, and the heaviest 1032·8. Of the last there were two examples. Those biles which had a low specific gravity were usually very abundant. I have taken as much as 1,500 c.c. out of one gall bladder.

The composition of the bile differs considerably. Thus, a mixture of three galls was examined. It had a specific gravity of 1027·3, and was strongly alkaline. The total solids were 8·29 per cent.

It contained:—

Matters soluble in ether, cholesterin, and fats	1·47
Taurocholate and glycocholate of soda	5·40
Matters precipitated by alcohol, principally mucin	1·27
Ash	0·19
Water	91·71
	100·04

Another sample, of which the specific gravity was only 1021·2, was alkaline, and contained 5·1 per cent. of solid matter.

It contained:—

Matters soluble in ether, cholesterin, fats, etc...	0·44
Glycocholate and taurcocholate of soda	4·17
Matters insoluble in alcohol, principally mucin	·44
Ash	·05
Water	94·90
	100 00

These examinations were merely intended as assays, in case it became necessary to estimate the value of the gall to be used; for instance, the colouring matter was not separated, but was weighed chiefly with the mucin. It could only have been estimated spectroscopically, and for this purpose it would have been necessary to prepare some pure biliverdin. But when bile was given up I abandoned these experiments.

The assays, however, show that the bile from rinderpest animals contains about 5 per cent. of the bile salts.

Dr. Koch hoped that, by the addition of virulent blood to normal bile, an immunising fluid might be manufactured, because, if such a mixture was allowed to stand 24 hours, animals injected with 10 c.c. did not suffer from rinderpest. Unfortunately, however, they were not rendered immune thereby.

I have repeated these experiments with the same result, and have also shown that the substances in normal bile which destroyed the organism, for it is evidently destroyed, were the bile salts.

I prepared some pure bile salts from normal gall in the usual way, made a 5 per cent. solution, and added to the mixture 10 per cent. of virulent blood. If used soon after mixing, the animal had the disease, just as in the case of the bile; but, if allowed to stand for 24 hours, the animal generally escaped.

I have even succeeded in immunising an animal by the action of the bile salts on the virulent organism at 37·0° C. for 116 hours.

The bile also contains a small quantity of chemical substance, which confers a passive immunity. This is shown by the fact that, though animals injected with filtered bile always take the disease when afterwards injected with a small dose of rinderpest blood, about half of them recover.

My present opinion as to the manner in which the bile from a rinderpest animal acquires the property of immunising is as follows:—

The mucous membrane of the gall bladder of an animal suffering from rinderpest is always inflamed. There are small petechiæ on the course of the veins, hence blood continually enters the bile in small quantities, either directly or by passage through the walls of the vessels. Under ordinary circumstances the bile would destroy the virus, but as that which enters the bladder has been for some time confined in the immediate neighbourhood of the gall, and in liquids which have been gradually more and more impregnated with gall, it has become habituated by degrees to live in a fluid containing bile salts, and has, in so doing, become attenuated.

It has been pointed out to me that the bladder is continually emptying itself, and that therefore there would be no time for the organisms to become acclimatised. But probably the acclimatisation is accomplished before the organism actually enters the bladder.

That the attenuation is more probably due to the bile salts than to the antitoxin is shown by the destructive effect which normal bile salts exert upon the virus.

THE BACTERIOLOGICAL DIAGNOSIS OF CERTAIN INFECTIOUS DISEASES IN CONNECTION WITH PUBLIC HEALTH WORK.*

BY SHERIDAN DELÉPINE, M.B., B.SC.,

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I. Introduction.

(*a*) A QUARTER of a century has not elapsed since the time when we generally considered disease to be essentially a disorder of function or structure. The belief in the action of external causes did undoubtedly exist in the mind of our predecessors; but few would have been prepared to admit, as proved thirty years ago, that such prevalent diseases as tuberculosis and malaria were due to the penetration into, and evolution in, our bodies of living organisms which, by their invasion, multiplication and development, were mainly responsible for the course which these diseases take. The transient action of physical or chemical factors, and the existence of a number of diathetic tendencies were chiefly blamed, and the course of disease, according to the then current notions, was determined by the lesions resulting from the disordered activities of the tissues composing the body. A chill, retained bile, sudden stoppage of perspiration, exposure to damp, to heat, to cold, etc., were thought enough to disturb the nervous or circulatory mechanism of one or other organ; as a result of this we had diseases of the liver, kidney, heart, etc. The lesions found in these organs were made responsible for most of the symptoms observed. These lesions in the mind of most constituted the disease.

There were miasmatic or contagious diseases in which the existence of a contagium was admitted, often on a theoretical basis; but the diagnosis of these diseases was based entirely on the study of symptoms and lesions. The only information which was sought was that which could be found by anatomical or physiological methods, during life or after death. The medical man was occasionally helped by events when a doubtful case, say of diphtheria, would prove its nature by infecting other persons. That this spontaneous experimental method was not always taken advantage of is well proved by the fact that the contagious nature of such a prevalent disease as tuberculosis was overlooked by the great bulk of the medical profession for many centuries.

There is not one of us who has not experienced either in his own practice or in that of his colleagues and even of his teachers how often symptoms and even lesions are deceptive. We are constantly reminded by the results of necropsies, by unexpected deaths or recoveries, how uncertain the diagnosis of atypical cases of disease is. When we find general tuberculosis or chronic septic diseases mistaken for typhoid fever, cases of scarlet fever or septic tonsillitis taken for diphtheria—and that not always by inexperienced men but even by high authorities—we cannot help feeling that any method which could in any degree make diagnosis more certain would be a great boon to human kind. This desire, which is common to all thoughtful medical men, is perhaps felt more keenly by medical officers of health.

By a discovery of certain pathogenic germs it is possible to foretell more accurately the ultimate issue of the inaction which they produce than it is to surmise what will occur by the observation of the phenomena arising at any of the intermediate stages of the reaction; this is a clear and well-admitted result of the work of Pasteur and of his successors. A membranous sore

* A paper read at the Conference of Medical Officers of Health, at the Sixteenth Congress of the Sanitary Institute, Leeds, on September 15th, 1897.

throat, a pleuritic effusion may leave us in doubt as to the probable nature of a cold, but the discovery of a bacillus of tuberculosis and diphtheria, of typhoid fever, etc., will at once remove all doubt from our mind and indicate at the same time the most suitable methods of dealing with the case.

(*b*) I have reminded you in a very general and superficial way of these few elementary facts to make clear to you the spirit in which I approach the subject on which I have been asked to address you. The ordinary methods of clinical diagnosis are still relied upon in most districts. Statistical returns, preventive measures, are still based on them. Yet in the case of some of the most prevalent diseases microbiology has given us the means of obtaining results which, if not perfect in every respect, are much more accurate and speedy than the ordinary clinical methods. If I am correct in making this statement—and I hope I shall prove this to be the case—it is highly desirable that advantage should be taken of these new methods by all medical men and more especially by those who have charge of health offices.

It is of the highest importance that errors of diagnosis should be reduced to the utmost. Errors of diagnosis vitiate and render partly useless much of our work, and that for a number of reasons. 1. Statistical returns indicate to us the prevalence of certain diseases at various times and in various places and also the amount of improvement which preventive measures have produced, but these returns will be misleading if not based on sufficiently accurate data, comparable with each other wherever and by whomsoever they have been collected. 2. Isolation of patients affected with a certain contagious disease in hospitals provided for that disease becomes a source of contagion if patients affected with other diseases are sent by mistake to those hospitals. 3. The cost of isolation is thereby increased as well as the waste of working energy. 4. The knowledge of disease and of its treatment is retarded owing to the fact that practices based on error, not being checked, are allowed to grow into routine, supposed cases of recovery from certain diseases are recorded where the disease never existed, fatal terminations follow supposed mild illnesses which should have taken a benign course, and doubt is made to reign where progress might have been expected. It must be well understood that I speak of those errors of diagnosis to which the most careful and experienced men are liable. As to those errors which are the result of gross ignorance or of systematic practice I do not even allude to them here, as their existence should be ignored, but so far as they are a discredit to our profession any method which should give the means of checking such abuses would be of great value.

I think that so far I have expressed nothing which will not be readily admitted. There remains for me to prove by practical results that we have now at our disposal several bacteriological methods giving us the means of increasing considerably the accuracy of *early diagnosis* of a certain number of infectious diseases. As these methods have been extensively tried in my laboratory at the Owens College for the last five years I am able to submit to you the results of my personal experience.

The diseases with regard to which I have been able to give assistance to the Public Health Department of Manchester and surrounding towns have been chiefly tuberculosis, typhoid fever, diphtheria, cholera, epidemic diarrhœa or gastro-enteritis, hydrophobia, anthrax, and food poisoning. This naturally does not include all the cases in which assistance may be given by bacteriology. To show how the work is done and answers administrative purposes it will be sufficient to refer specially to three diseases which are constantly with us, and the bacteriological diagnosis of which is based on four different types of methods. I refer to tuberculosis, diphtheria, and typhoid fever.

II. *Tuberculosis, with some remarks on Summer Diarrhœa.*

With regard to tuberculosis, this not being yet a notifiable disease, there is no question of case diagnosis;* our work has been chiefly directed to the detection of tuberculous milk. During the twelve months ending with last August 103 specimens of milk have been sent to me for examination.

Of these twenty-four had been collected for Dr. Niven in Manchester byres from cows affected with tuberculosis, most of which had also disease of the udder. These specimens were collected by Mr. King, the chief veterinary inspector, and his assistants, and sent immediately to the laboratory. I need hardly say how important a part of a systematic inspection of cowsheds the examination of milk is. This was abundantly proved by the results obtained.

The milk being drawn direct from the udder of an infected cow into a sterilised vessel is that of a single animal and is undiluted with milk of other cows. On arrival at the laboratory the sample is at once examined in the following way. 80 c.c. of the milk are centrifugalised in two stout cylindrical test tubes holding 40 c.c. each. For this purpose I use a centrifugal machine giving 3,000 revolutions to the minute, and I allow the machine to work for fifteen minutes. The tubes have been previously sterilised by steam. They are kept closed with an india-rubber cap till the moment they are used. When this part of the process is completed the thickness of the layer of cream and the diameter of the sediment are measured, the colour of the milk and sediment are noted, and the reaction and specific gravity of the milk left in the bottle are taken. These preliminary tests are useful chiefly to give a general idea of the state of the specimens as they reach the laboratory and seldom yield information of any importance except for purposes of control. Microscopical preparations are then made with the cream and sediment of the centrifugalised milk. One drop of the cream is taken with a sterilised platinum loop and spread on a cover-glass and allowed to dry; the cream together with the milk is then removed by means of a wide pipette connected with a vacuum apparatus, this is done with the tube standing vertically and without disturbing the sediment. When only a thin layer of milk remains the tube is inclined gently so as to expose the sediment which adheres firmly to the bottom of the tube and a small drop of it is taken and spread on a cover-glass; this is done with a platinum loop holding from two to three milligrammes. Several cover-glasses are prepared in this way. Some drops of cream and sediment can then be examined at once for the detection of cells, foreign bodies, and motile bacteria. The other drops spread in thin layers are allowed to dry, passed three times through the flame of a Bunsen burner and then left for several hours (usually twenty-four), in a mixture of equal parts of ether and absolute alcohol. At the end of that time the alcohol and ether are heated over a water bath to complete the extraction of the fat, the cover-glasses are taken out, washed with absolute alcohol, and are then ready for staining by one of the usual methods. If they are stained for tubercle bacilli, the "Ziehl Neelsen" method is most suitable. But if one desires to stain the preparations with ordinary solutions of anilined yes for special purposes, the film should be submitted first to the action ot some dilute acid for a few seconds. I find that sulphuric acid 10 per cent. answers very well for this purpose. If acid be not used the proteid matter coagulated on the cover-glass in the spaces between the fat glands stains deeply, and neither micro-organisms nor cells can be seen distinctly. This allows one, however, to obtain a permanent preparation, showing clearly the number and size of the fat globules. Immediately after preparing the films two guinea-pigs are inoculated, each with the sediment of

* We hope, however, to be able before long to extend our work in that direction.

40 c.c. of milk. The sediment contained in each tube is mixed with a little of the supernatant milk, so as to make a total quantity of 2 c.c. for subcutaneous injections and 5 c.c. for peritoneal inoculations.

The results obtained by these methods have already been recorded in Dr. Niven's "Report on the Manchester Cowsheds," issued at the beginning of 1897. In Professor Hope's "Report of the (Liverpool) Medical Officer of Health on Tuberculosis as affecting the Milk-Supply of the City" (May 6th, 1897), the results of another investigation, having for its object the detection of tubercle bacilli in milk supplied to cities, are given. Both in Manchester and in Liverpool a large number of specimens supplied from the country to town milk-sellers have been collected by inspectors at railway stations or elsewhere, as the milk reached town I have examined all the specimens collected in Manchester, and part of the specimens collected in Liverpool—in all eighty samples. The method followed by me was exactly the same as the one already described.

Regarding the value of the methods I have described, I may say at once that the microscopical method is of very little use for the detection of tuberculous milk. It is only when tubercle bacilli are very abundant that they can be discovered, without a considerable loss of time. Even after separating the sediment, in which a large portion of the bacilli are found, it is necessary to examine several preparations before one or two bacilli can be discovered. The amount of sediment obtained from 80 c.c. of milk seldom exceeds, it is true, 200 milligrammes; but supposing there were 300 bacilli in the 80 c.c. of milk examined, and that 200 had been carried down into the sediment (many are carried up with the cream), the search might be very lengthy. If the bacilli were very equally distributed in the sediment, each milligramme of the sediment would contain one bacillus; and as each film is prepared with two or three milligrammes of sediment not more than two bacilli should be expected on each preparation. But many of the bacilli are found in small groups of three, five, ten, or more. It is not likely, therefore, that there would be more than forty of these groups in the sediment, and it might be necessary to examine as many as five drops before bacilli were detected even in the case of a milk containing the large number of bacilli I have supposed. On this supposition there should be nearly 10,000 bacilli in a pint of milk, and yet it might take several hours to detect them unless, as sometimes is the case, some were found in the first drop examined. This shows that when tubercle bacilli are easily found in a sample of milk by the microscopical method, the bacilli are usually very abundant, but when the tubercle bacillus is not found, even after a search extending over several hours, it is not safe to assume that the milk was not tuberculous and incapable of doing harm. On the other hand it is well known that when a guinea-pig is inoculated with even a few bacilli it invariably becomes tuberculous. Were they ten times less numerous than I have supposed in the example I have just given, the number of tubercle bacilli found in the sediment of 40 c.c. of milk would be still easily detected, since material containing eight or ten tubercle bacilli, revealable by ordinary staining reactions, would be enough to produce tuberculosis in the guinea-pig. There can be therefore no doubt as to the superiority of the inoculation method when exact results are wanted. This is well shown by the outcome of the investigations to which I have already referred. Taking only two of the series of samples I have examined: Of twenty-four specimens of unmixed milk obtained from tuberculous cows, two were found by microscopical examination to contain tubercle bacilli clearly demonstrable; six were found to be tuberculous by the inoculation method, including the two in which bacilli had been detected microscopically. Of forty-five specimens of mixed milk (in which the milk of tuberculous cows was diluted with milk of non-tuberculous cows) it was not possible in any case to discover the tubercle bacilli

by a careful examination of two drops of sediment. Three of these specimens were proved to be tuberculous by the inoculation method.

The microscopical examination, however, is not without use, for in all the cases which were proved to be tuberculous by inoculation the milk was found to contain a large number of leucocytes and epithelial cells: this presence of cells was also recognised in milk coming from udders affected with non-tuberculous mammitis, and therefore is not diagnostic of tuberculosis; but tuberculosis was never communicated in my experiments by milk poor in cells. This is a confirmation of the well-known fact that the milk of tuberculous cows does not, as a rule, become infectious when the udder is not tuberculous.

The testing of milk by inoculation is not only useful with regard to tuberculosis, for in a large proportion of cases milk which has been badly kept exhibits virulent properties in various degrees. Thus, after excluding the tuberculous samples, I can classify the samples I have examined as follows:

	Unmixed Milk.	Mixed Milk.
	Per cent.	Per cent.
With no noxious properties	60·5	40·8
Slightly irritating	38·5	40·8
Highly virulent—*i.e.*, causing acute purulent peritonitis or rapidly fatal septicæmia	—	19·2

It will be at once evident that the properties of mixed milk which are capable of producing mischief are much greater than that of unmixed milk. I cannot here enter into details which have been recently published in the *Journal of Comparative Pathology and Therapeutics* (December, 1897), but I may state that this difference is chiefly due to the multiplication of micro-organisms which are introduced into the milk at the time of milking, or afterwards when the milk is unduly exposed to various contaminations—when the temperature is favourable the microbes multiply very rapidly: this occurs chiefly in summer, and I have found good reasons to believe that it is a very important cause of summer diarrhœa.

It is well to remember that the bacillus which is most to blame, increases rapidly in number when milk is kept, and especially when kept at summer temperature, causes great mortality in the guinea-pigs inoculated peritoneally. It is therefore most important in conducting any investigation on tuberculosis to inoculate as soon as possible after milking in order to prevent the mortality and lesions due to that microbe.* There remains only to add that to ensure thoroughness in investigations of this kind it is desirable that certain data should be supplied with each sample of milk. The following schedule which I have adopted for unmixed milk collected in the stable has been of great use to me.

REPORT ON RINDERPEST TO THE TRANSVAAL GOVERNMENT.

THE following is a translation of the report handed to the Government by Drs. Danysz and Bordet, the French scientists, and Dr. Theiler, the Government veterinarian, on their experiments on rinderpest, carried on at the Trial Station at Waterfall, Pretoria, from February 15th to June 15th, 1897, presented to the Government of South African Republic:—

* Or else the milk must be kept in ice from the time of collection to that of examination

To the Right Hon. the State Secretary :—We have the honour to report to your Honour that our experiments with regard to the curing of and "salting" against rinderpest have up to the present been attended by such results as to warrant us advising that the method now being tried at Waterfall be applied by the farmers to their stock, and without any fear of only partial success. We believe that it is therefore useful, and even necessary, to publish a general review of rinderpest matters, and in particular :

1. Our valuation of the methods already adopted against rinderpest.
2. Our advice with regard to the method which we think should be used for combatting rinderpest.
3. Definite instructions as to the application of this method.

Methods of Inoculation Hitherto Employed.

1.—*The Waterberg Method.*

At the time of our arrival at Waterval (at the end of January, 1897), the only method of inoculation against rinderpest which was made use of was that known as the Waterberg or Grobler method. This process consists of the making of a mixture of blood, gall, and the watery substance (*zucht*) from the abdominal cavity, or peritoneal fluid, and letting this mixture stand from one to three days ; of steeping in this liquid woollen wads cleansed from all greasy substances, and putting these wads under the hide of the animal. Inoculation in this way takes place two or three times after an interval of from nine to fifteen days, and even later. This process was subjected to endless improvements, each one improving it after his own fashion, and it was generally very difficult to know what were the ingredients of the mixture and in what condition it was made. What we are able to say about this to-day is that the method was attended by varying results. In some instances all the inoculated animals succumbed after from ten to twenty days after the inoculation, in others the mortality was from 10 to 95 per cent., and in the remaining instances the inoculation seemed to have no result—the animals were not sick, and thus were probably not salted.

Inoculation with Gall

Dr. Koch, in his report to the Cape Government, sent from Kimberley on the 10th February, speaks of two important facts :—

1. That 100 c.c. serum from a salted animal is a preventive against a small quantity of virulent blood of an animal suffering from rinderpest.
2. Healthy beasts injected with 10 c.c. gall, taken from an animal that has died from rinderpest, will offer a stubborn resistance to the disease six or eight days after the inoculation.

We shall refer later on to the first point, as far as the serum from healthy beasts is concerned. With regard to gall, since the publication of the report thousands of animals have been inoculated with gall, and the following facts have been ascertained :—

1. In some cases the gall is as an actual infectant, and infects the inoculated animals with a deadly disease.
2. The gall may produce a mild disease, and thus the animals are salted.
3. The gall may be productive of no results, the animals not being sick. In this case the beasts are not salted after the inoculation.

Theoretically, inoculation with gall should frequently give perfect results, but in practice this method is attended by the same difficulties as the Waterberg method, although in a lesser degree. It can conduce to the spreading of the disease without affording perfect certainty as to the salting of the

animals that have not become sick. It has been experienced that animals inoculated with gall may die of rinderpest within a month or two after inoculation. It can be generally noticed that an inoculation which causes neither immediate immunity nor a light disease, and in which the inoculative substance must be taken from dead or sick animals, will be attended with difficulty and danger in case of application to rinderpest. On the one hand there is always the risk of infecting the animals either at the time of inoculation, or before they begin to become salted. On the other hand, it is not generally known if the animals that did not contract the disease are really salted. A rather important fact still remains to be commented upon. It appears to be certain that in case the animals contract the disease after from twenty to thirty days after the injection of gall, their disease is generally of a less serious nature than in the case of animals which have not been inoculated, and the former can be more easily cured with the blood of salted oxen than the latter. We therefore believe inoculation with gall must not be abandoned ; on the contrary, whenever there is an opportunity of procuring gall in good condition (taken from an animal the moment it dies), this must not be allowed to slip, and healthy animals must be injected with it as far as it is possible to protect the inoculated beasts against contact with the disease during the first ten days. In case, however, the disease breaks out amongst the herd, inoculation with blood may be resorted to, and the sick or threatened animale will take a turn for the better. With regard to serum, Professor Koch writes the following in the report referred to :—

> In my last report I was already able to inform you that blood serum from beasts that have recovered from rinderpest possesses a certain preventive property for healthy animals, when these are inoculated with it. Its preventive properties are, however, not considerable, because 100 c.c. of such serum is necessary to protect an animal against the inoculation of a small quantity of rinderpest blood. The salting process is in its nature a passive one, and will only be of temporary effect. The serum is not used for inoculation on a great scale.

Professor Koch thus confirms the fact already discovered by Mr. Semmer about a year ago (Mr. Semmer has studied rinderpest in Russia), namely, that the serum of salted oxen possesses properties which render oxen immune from the disease, and he states at the same time that this immunity is only a passive one, affords only temporary exemption, and cannot be used in practice for salting purposes. Messrs. Theiler and Watkins Pitchford ascertained in December, 1896, that oxen inoculated with serum of salted beasts, and having withstood a quantity of rinderpest blood, become sick and may die, if subsequently brought in contact with diseased animals.

Inoculation by Means of the Blood of Salted Animals.

In our letter to the Government, dated 17th March, we wrote as follows :—

> In the matter of rinderpest it was our main object to procure a serum which could be successfully applied to a herd in which the disease had already made its appearance, and where the employment of methods which brought on the disease in a light degree, could only aggravate the condition of the animals already affected.
>
> The result can now be looked upon as attained, and the use of blood from salted animals, as procured by us up to the present, can be applied in practice if a number of salted oxen were placed at our disposal sufficient to supply the quantity of blood which would be required from us. We therefore ask your Honour to appoint a Commission, which, after having taken into account the value of the method, can take such steps as may be necessary to secure its application, and make the method properly known.

The results we had obtained at that period were as follows :—

(*a*) An injection of serum counteracts an injection made twenty-four hours later of a small quantity of virulent rinderpest blood.

(*b*) A previous injection of active serum allows the animals to offer resistance to the disease which is conveyed to them by contact with affected animals.

On the 5th of April the Government intimated to us that Landdrost Schutte, of Pretoria, had been entrusted with the task of appointing a Commission empowered to regulate with us the practical application of the method.

The method which we have found to be the best for grappling with rinderpest in the already infected districts, has as it basis the principle of serotherapeutics, a principle, as is known, with which the world has been acquainted for many years, and which has been applied to several diseases with advantageous results.

In the main this principle is as follows : When an animal has suffered from a disease and then becomes salted, it is found that after a certain time certain substances are in its blood which, if in sufficient quantity, will prevent the animal contracting the disease again. In addition to this the blood of an animal so salted, when injected into healthy animals, enables them for a short time to stand the said disease, thanks to the useful substances contained in the blood of the salted animal. Thus healthy animals can be exposed to contac, with the disease, after the inoculation with such blood. Owing to the protecting influence of the elements which are in the blood, it can be expected that these animals will only contract the disease in a light degree, which will, however, be sufficient to salt them for the future. To everyone who is acquainted with this important principle, it must naturally occur to apply it to rinderpest, and try to protect the animals against the epidemic by means of injecting serum procured from cured and salted oxen. Mr. Semmer made known in Russia that the serum of salted oxen protects the healthy oxen against rinderpest to a certain degree.

Shortly before our arrival in South Africa Messrs. Theiler and Watkins Pitchford discovered the same properties in the blood. At Kimberley Professor Koch arrived at the same conclusion, but without ascribing to the serotherapeutic method that which we think is due. He declared it of less value than the process of salting with gall.

It must first be stated that the treatment of rinderpest by the serotherapeutic method, when adopted on a large scale, cannot be really successful unless one determines quite accurately the whole of the conditions under which this principle must be carried in effect. It is just this regulation to which we have devoted our attention. We will, therefore, proceed to give details of the same, because these several conditions and regulations must necessarily be known, if it is desired that this method of treatment with the blood of salted oxen shall be attended by good results, regularly and permanently.

Here follow the chief queries which arise in connection with this method, and the answers which we think should be given to each :—

1. In what condition must the salted oxen be from which blood is taken for injecting healthy (raw) animals ?

Firstly : When is the blood the most active ? Must it be taken immediately after the cure, or a long time afterwards ?

The experiments prove that the blood of oxen salted by rinderpest acquires strength shortly after the cure, but the maximum strength is reached about two months after the salting.

After the lapse of a pretty long time the animal still supplies blood of protecting properties, but of inferior strength.

The most advantageous time to take blood is from two (or from $1\frac{1}{2}$) to five or six months, after the animal is salted from rinderpest.

Secondly : It must be remarked that it must be recommended to take blood

from those salted animals which showed the most distinct and even disquieting symptoms. Animals inoculated with gall, and which have shown no signs of rinderpest, must not be made use of.

A third point arises, and that is one of the most important: Is it desirable to make use of the blood from animals simply salted, or of the blood of such animals which were subject to treatment after the cure?

As already pointed out, the blood of salted animals possesses a very noticeable strength, generally about the second month after the cure. But it is recommended, before taking blood from them, to subject these animals to a preliminary treatment, consisting of injections of virulent blood procured from dead animals, or better still, from animals suffering badly from rinderpest.

This is to be recommended for two reasons: The injections with infected blood, even in considerable quantity, can have no injurious effect on salted animals, and an ox salted from rinderpest will never get sick again by injection of this blood. This injection proves whether the animal is really and truly salted ond possesses full power of resistance against the virus. Further, the useful properties of blood from salted oxen are appreciably strengthened by previous injections to those animals of virulent blood. It is the oxen salted about two months previous, and which received two or more consecutive injections of infected blood, which have supplied us with the best working blood in our experiments. So, from the time of our arrival at Waterval in the beginning of February, we applied injections with infected blood on animals properly salted. Several oxen received a number of injections, and the strength of their blood appeared to be far above the average. A dose of 40 c.c. of such blood salts the oxen after immediate and permanent contact with rinderpest.

It is at present evident that it is difficult in practice to make exclusive use of blood from salted oxen which have been treated with infected blood. In many cases we shall be obliged to take blood from salted oxen two months previously, but which were never under treatment before. But it is clear that after a certain time the number of salted oxen treated with infected blood will increase, and that they will be almost exclusively used for the purpose of procuring suitable blood.

2. In what condition must the protecting blood be so that it can be injected?

The question must be put whether the blood must be used in its serum or defibrined condition? The answer is simple, because if a great number of animals are to be inoculated, it is necessary to use defibrined blood. The preparation thereof only causes the loss of a very small proportion of useful matter, while, if serum is to be prepared, a fairly large portion of the blood is removed. For these reasons we must accept that the inoculation with serum is almost unworkable in practice. Moreover, the defibrined blood can be prepared with more accuracy and expedition, which guarantees its purity. It takes a day before the serum is serviceable; and in that case it can easily be spoiled, and thus contain noxious elements. The test has still further shown that of an equal quantity the working strength of defibrined blood is the same and probably greater than that of serum. On account of these reasons it is better to use defibrined blood. It must be injected immediately; and this blood cannot be kept longer than one day for injection, if strict precautions are not taken, which are difficult to apply in practice.

3. How must the animals under the influence of the counteracting blood be treated?

It is known that the blood of salted oxen does not give permanent immunity from rinderpest, but that animals injected with this blood acquire the property (but for a comparatively short time) of withstanding the attack

of the disease more easily. If they are brought in contact with rinderpest after the injection with blood, they contract the disease, but recover, and become salted.

When the animals are already sick, or if they already possess the germs of rinderpest at the moment of injection, nothing else remains to be done than to inject blood to make the disease less serious for them. On the other hand, the animals that are not affected by rinderpest at the moment of injection, must become infected, so that they can catch the disease in a light form, which the blood will help to get through, but which is also sufficient to thoroughly salt them. Rinderpest can be transmitted either by allowing the animals to mix with sick oxen or by injecting rinderpest blood, and it must be known which of the two means is the better. We are convinced from the trials that injection solely and exclusively developed through rinderpest blood, cannot be regarded as good, as it is impossible, within the range of our knowledge, to apply it in practice in such a manner as to obtain good results.

The question immediately arises: Why? An ox is first injected with a sufficient quantity of preventive blood (taken from a salted ox that has recovered), and the following day with a small quantity of infected blood, *i.e.*, 1-10 c.c. (1-500 part of the said quantity is sufficient to kill any beast that has not been subjected to any preventative), then it is seen the animal does not contract the disease. It does not show any visible symptoms of rinderpest; it may even be stated that at the identical time no increase in temperature takes place. So, a quantity of active blood from a salted animal prevents all infection by 1-10 c.c.m. virulent blood. But bring the animal into contact with sick oxen a little later, a week after the inoculation, for instance, then it contracts the disease, and shows signs of fever at the identical time it receives this natural infection. However, the animal recovers from this attack if the previous injection of the curative blood has been sufficiently large and did not take place for too long a time. From the foregoing, it can be concluded that the animal was neither sick nor salted as the result of inoculation with this virulent blood. It is known for a fact that salted animals can be actually driven right amongst a herd suffering from rinderpest without showing afterwards either fever or the slightest trace of disease.

The injection of small quantities of rinderpest blood in animals that have been previously inoculated with the blood of salted animals, is not sufficient to infect a beast in such a degree as to secure for them a continual salting after the cure.

The sickness, however, may be caused by considerably increasing the quantity of poisonous blood, or by decreasing more or less the dose of preventative blood, but then there would be the danger of the animal dying from the real rinderpest. To attain a good result, a carefully regulated quantity of blood mnst be injected, large enough to occasion a small degree of sickness, small enough to guard against serious sickness or death.

But the correct measure of such a quantity of infected blood cannot be determined in practice, as it depends on how much strength the preventative blood previously injected possesses. Two samples of preventative blood never have the same strength, and the estimation of their value would be a long and tedious matter, as the number of samples to be examined would be too considerable.

It happens differently with animals that have received an injection with preventative blood, and come into contact with rinderpest immediately afterwards. Such animals are not unsusceptible to this natural infection. They always get an attack of rinderpest which is not deadly, when the preventative blood used is good, but which is sufficient to well salt the beast. We may add that the beast still gets a slight attack of sickness if it has received a quantity of preventative blood considerably more (four times more) than that

sufficient to prevent death. If a number of oxen are injected with 40 c.c. efficacious preventative blood and another lot with 160 c.c. of the same (four times as much), and the animals are brought into direct contact with the sickness, then those which have received 40 c.c. catch the disease, but recover, but with regard to the others high fever appears in the typical time, the fever lasting some time before entire recovery takes place. Such a proof demonstrates that even the quantity of preventative blood is greater than is necessary, the animal is exposed to continual contact, distinctly catches the disease, becomes cured, and is thus decidedly salted. Thus the animals suffer no inconvenience whatever by the injection of too great a quantity of preventative blood.

It can thus be seen that infection by means of contact is decidedly to be preferred to that occasioned by poison-blood alone. It allows for regular symptoms of a light sickness, entirely indispensable to the securing of a solid and lasting salting. The explanation of the difference in the results obtained by infection, either with the injection of poisonous blood or by immediate contact with rinderpest cattle, has more theoretical than practical interest, and we shall not follow out this matter at greater length.

We content ourselves with the observation that one of the most advantageous conditions of natural infection lies in the fact that instead of causing a sudden isolated infection, the contact causes a whole series of light consecutive infections. New tests not yet finished, are necessary to study this question more completely. We do not wish to state that infection only by means of contact, which at the present is the best, should never be changed, and that it would never be necessary to introduce in it any innovations.

It is thus by means of contact that infection must be transmitted to animals injected with preventative blood. When must this contagion take place? It must be done when the animal is most under the influence of the salted blood; that is to say, so speedily as possible after the inoculation with blood —the same or the following day.

There still remains one point, with regard to the manner of treatment of the animals inoculated with the blood of salted beasts. That is to say, it must be known whether these animals must receive one or more injections with blood.

As we have seen from the above, the best working blood is procured from those animals which have been spontaneously sick and salted, and which were seriously sick, and were inoculated with two or three injections (each of 100 c.c. rinderpest blood) during the third, fourth, and fifth month after the salting. Thus granting that a single injection with blood of animals thus salted, is sufficient to salt almost all the animals under treatment, in order to attain always the same results, two injections must be made of 100 c.c. blood of salted animals (taken not longer than five months after the salting), and which have not been previously treated with rinderpest blood.

The quantity of blood to be injected depends on:

1. Whether the beasts to be treated are still healthy, or
2. Whether they are already sick.

In the first case, when the animals are still healthy, the quantity injected must be the same as mentioned above.

In the second case, when the animals to be treated are already sick, they must be injected two or three times oftener than the healthy animals—according to the severity of the disease.

As it is impossible to determine beforehand the exact condition of all salted animals, we strongly advise that at least two consecutive injections, each 100 c.c., be made, an interval of from five to six days being observed between each.

3. May the animals treated according to our method serve for the inoculation of others?

One decided advantage of this method lies in the fact that animals salted according to it can help other oxen with their blood. Owing to this circumstance, the number of animals suitable for furnishing a supply of inoculative matter will be soon quite sufficient, and still increase afterwards. With regard to this kind of animal, it will be worth while making a few observations, to show how a sufficiency of strong, preventative blood can be obtained from such animals.

In a herd inoculated with blood, brought into contact with the rinderpest immediately after the inoculation, the disease will appear in a light form, and the whole herd, or the largest portion thereof, will be cured. But all animals will not contract the disease in the same degree.

Those animals which are to be selected for bleeding purposes, must be picked out of those which were the most dangerously sick, that is to say, those which showed the most visible symptoms of rinderpest. After their recovery these animals should regain the signs of their former health, and should not remain too thin and weak. When the animals have sufficiently recovered, they have to receive one injection with rinderpest blood, which should subsequently be repeated. After a month-and-a-half or two months, these animals are suitable for supplying preventative blood, and may be bled fifteen days after the last injection of virulent blood. The bleeding process can be repeated several times, after which it is advisable to make a fresh injection with rinderpest blood. These oxen may be serviceable for five months after the time of salting.

Where must the application of the method first take place?

As the method of inoculating with blood offers immediate resistance against rinderpest, and even provides for the treatment of animals suspected to be affected, it will be advisable to first of all apply it at the farms where the plague has already made its appearance, or where it threatens to break out. Subsequently, after the number of salted beasts has been increased by a series of inoculations, plans can be made for further application of the treatment. In every case it will be advisable to conduct the treatment by means of rinderpest blood of salted beasts, in order that they may be afterwards made use of against a further spread of the disease.

(*To be continued.*)

Notes and News.

TUBERCULOUS MENINGITIS PRODUCED ARTIFICIALLY.—At the meeting of the Society of Biology, held on March 5th, Dr. Louis Martin gave a demonstration of how tuberculous meningitis could be produced in guinea-pigs and rabbits by injecting tubercle bacilli into the cerebro-spinal fluid. He took a slightly curved needle and put it into the cavity of the cranium, passing through the ligaments joining the occiput to the atlas, keeping the needle against the occiput, using this bone as a guide, so as not to injure either the medulla or the cerebellum. This operation, in the guinea-pig, is one of extreme delicacy. When the injection is made it must be made very slowly, so as not suddenly to increase the tension of the cerebro-spinal fluid. Guinea-pigs injected with tuberculous cultures in the cerebro-spinal fluid die on from the ninth to the fifteenth day. After the injection the animal suffers from fever, but it neither wastes nor is there any paralysis. Three or four days before death the coat stares, the guinea-pig rolls itself into a ball, and loses weight very rapidly; paralysis appears during the last day or two, and specially affects the hind limbs; the animal is very ill, and dies with its temperature much raised.

Dr. Martin has generally noticed flattening of the abdomen. In the rabbit the operation is very easy, and these animals are much less sensitive to tubercle than are guinea-pigs. The progress of the malady is less rapid; wasting and paralysis do not appear before the third week or even later. They die after five weeks or two months, and on making a *post-mortem* examination tubercle is found surrounding the vessels and there is general gelatinous œdema spread over the peduncles of the brain, exactly in a similar manner as in children. By the courtesy of M. Marfan, Dr. Martin was enabled to use some cerebro-spinal fluid from a child who had died from tuberculous meningitis. Half a cubic centimetre was injected into a guinea-pig in the manner above described, with the result that it died in eight days, and under the microscope the meninges were found to be swarming with tubercle bacilli. Dr. Martin cultivated the meninges, and obtained a culture, of tubercle bacillus. A control guinea-pig, inoculated with the same dose died in four weeks. Dr. Martin also obtained some cerebro-spinal fluid from a tuberculous patient during life by means of a lumbar puncture, and inoculated this fluid into the cerebro-spinal space of a guinea-pig The animal died in eighteen days. A control guinea-pig, inoculated hypodermically, only showed a small ulcerated patch at the point of injection. In two months after the injection the animal was still alive, With the view of finding out if this investigation would be a help in the diagnosis of tuberculous meningitis, Dr. Martin drew off some cerebro-spinal fluid from rabbits infected with tuberculous meningitis, and having injected it into guinea-pigs, observed that they died after an interval of time in direct relation to the date at which the rabbit died. In a rabbit already showing signs of paralysis Dr. Martin drew off 2 c.c. of cerebro-spinal fluid, and on the next day the rabbit, which had been lying motionless on its side, was able to stand up on its feet; the improvement was, however, of short duration, for the rabbit died six days after the operation.—*British Medical Journal.*

THE PRESCRIBING DRUGGIST AGAIN.—An inquest was recently held at Derby upon the body of a woman, aged 75 years, who died primarily from pneumonia, but in whom there also existed chronic Bright's disease and arterio-sclerosis. The chief interest in the case, however, was the fact that just previously to her death she had taken sixpennyworth of cough mixture because "she did not believe in doctors." Dr. Gibbons, who was called in at the last, found her under the influence of some narcotic, which he said had hastened her death. At the inquest Mr. C. W. Booth said that the cough mixture which the deceased had taken was a preparation of his own, and he did not want the formula to become public property. He was directed, however, to write it down for the benefit of the jury. Two ounces of the mixture contained 40 minims of morphia besides compound tincture of camphor, and the dose for an adult was one teaspoonful. We do not quite understand what is meant by minims of morphia, but supposing that the pharmacopœial liquor morphinæ acetatis or hydrochloratis is meant the amount in the prescribed dose would be about 2½ minims. This is not excess, it is true, but the fact remains that no unqualified person should be allowed to prescribe such powerful drugs, and in addition to the morphia the presence of the opium in the compound tincture of camphor must be taken into consideration. Mr. Booth's methods were peculiar. It is true that he inquired whether the patient was an adult, but there were no directions on the bottle as to how often the mixture was to be taken. He left that to the common sense of the public. He never put a poison label on the bottle, nor did he enter the sale in a book. He was not compelled to do so, because morphia did not come within Schedule A of the Pharmacy Act. The coroner did not agree, and the witness at length allowed that he was wrong. The jury returned a verdict that the deceased died from pneumonia, and strongly censured Mr. Booth.

Extracts from Foreign Journals.

EPIZOOTIC OF DRY CONTAGIOUS ECZEMA OF THE NECK, WITHERS, BACK AND THIGHS OF THE HORSE.

(Extracts from a paper read by M. Alix before La Société Centrale de Médecine Vétérinaire.)

I DESIRE to call the attention of the Society to a cutaneous disorder which in the totality of its characteristics seems to me to have no complete resemblance to any of the skin-diseases that have hitherto been classified. The principal factor of the disease is its contagiousness—wherein it differs from the disease described by M. Cadéac in his dictionary of Veterinary Medicine and Surgery. The innumerable microscopic examinations which I have made have not resulted in the discovery of any specific agent whatever ; they certainly do not authorise the idea of any acaria or any known fungus.

The distinctly contagious nature of the disease, the great number of horses which it may attack at one time (a whole squadron, 160 to 170 horses were contaminated in the case under consideration), the lesions which it may bring about, the long period of unfitness for work which is nearly always a consequence of its attacks—all these demand the attention of veterinary surgeons. I therefore give details of this troublesome disease, which may give no end of anxiety to surgeons who have not yet met it.

Symptoms.—As in the case of the chronic dry eczema of M. Cadéac, the malady presented three stages ; the first was characterised by itchings relatively slightly marked, less marked even than in simple chronic eczema ; and so it was hardly possible to confound it, even at its beginning, with sarcoptic mange. These itchings did not, besides, seem to be in any way accentuated by either exposure to the sun, or by the heat of the stable. All the same, the itching was there, "the only important sign that can put one on the track of diagnosis at this period of the malady ; for it does not betray itself locally by any other signs than by a few small scabs or a few very ephemeral vesicles hidden at the root of the hair and dispersed over the shoulders and neck, over the withers and over the body generally. But the malady soon assumes a more expressive appearance. At the second period indeed the small scab due to the desiccation of the contents of the vesicles ruptured by rubbing and scratching falls off and drags off along with it the hair which grew up through it, and the result is a number of small bare spots (about the size of a grain of millet or a lentil). The depilations are in fact quite circular at first and correspond to the inflamed space on which the vesicle had sprung up ; afterwards, under the influence of new eruptions, new vesicles develop and keep on springing up again and again on the same spots or a short distance away : the bare parts join together and mix with one another, the depilation grows worse and worse and the inflamed skin shows large denuded surfaces, sprinkled with superficial erosions and sometimes with scabs, resulting more from rubbing and excoriations than from the exudation following upon the microbic inflammation ; for the surfaces never become clammy" (Cadéac). A peculiar curious fact to notice is this : at the stage of which we speak, these cutaneous exudations, far from spreading like a splash of oil, are not always, are not even, often in continuity ; in the majority of the cases they consisted of little islets quite separate and distinct. It also pretty frequently happens that the many small bare parts which characterise the opening stages of the last period get gradually better and by so doing constitute the final symptoms of the malady.

In the third stage, the skin was ordinarily denuded for the most part of its surface and more or less shrivelled, but on very rare occasions it was seen thickened and hanging to the subcutaneous conjunctive tissue as in the chronic eczema of M. Cadéac. Sometimes it was dry and covered with epidermic pellicles, sometimes quite soft to the touch and quite clear of all exfoliation. These symptoms were evidently the signs of a dermatosis of long standing, which I have, however, never seen terminating in sclerosis of the skin, and in complete atrophy of the heavy follicles and consequently in irreparable disorders, since in the animals that were worst attacked, even in those which were attacked for the second or third time, the coat has regularly grown again, and since the malady has, if I may say, remained always localised in the superficial part of the skin, if not on the epidermis alone. It is rarely, however, that contagious eczema assumes a gravity so considerable. When noticed in time and treated in the proper manner, it generally never gets beyond the symptoms of the second stage.

Progress, duration, termination.—It has been said that the majority of cutaneous affections are especially summer diseases, but this case is an exception to the general rule, in this way that, far from growing weaker during the winter, as for example, does the chronic eczema of M. Cadéac; it is, on the contrary, manifestly encouraged by the cold season. It may be said with truth that in the case before us, it was not so much the temperature that seemed to have any effect whatsoever on its appearance as the particular hygienic conditions in which the horses were situated, owing to the effect of the bad season, as I shall try to show in an instant. It is, besides, very apt to recur, like simple chronic eczema. I have even seen horses attacked for the third time; but the malady has, on its recurrence, quite as little as on its first manifestation, seemed to be the result of external and passing causes of excitement, such as a violent sweat or toilsome work, for example; although the supposition has been made by observers that this is often the cause of simple chronic eczema. If it is quite clear that several predisposing causes may intervene and have intervened here, the progress of the malady has always been regulated by contagion, the first and indispensable cause of the malady.

Although the two first phases of this disease are soon completed, and need scarcely more than from four to eight days each to develop, the general duration of the malady is ordinarily from one to two months, even if it has not to go so far as to the third stage, because, far from appearing all at once in all the points which will in course of time be affected, it evolves itself gradually, and almost always in the following order:—Shoulders and neck, withers, back, ribs, flanks, thighs, and belly. The head itself is often affected, but only slightly at the beginning, middle, or decline of the malady. If it gets beyond the third phase, it may continue two or three months, sometimes even more. In every case, the termination, which I have never seen turn out to be fatal, is heralded by the return to the normal production of epidermic exfoliations, and, above all, by a pronounced pigmentation of the skin, which may have commenced even since the second stage of the malady. Then soft hair begins to appear, which gradually gives place to ordinary hair, but always much darker than the hair on the rest of the coat. This peculiarity causes horses cured of cantagious eczema, with their big, dark splatches scattered here and there, to assume an aspect sufficiently different from that which they formerly presented to often cause a difficulty in knowing them again.

Curative Treatment.—The first thing to be done is to wash well with soap and hot water the whole body of the animal after clipping, and to disinfect the skin with the aid of a strong solution of bichloride of mercury (2 to 5 per cent.) This treatment presents no danger, whatever people may say of it.

As soon as the scabs form, smear their surface with simple phenicated vaseline, or, better, with the following mixture:—Glycerine, 50 grammes; water, 50 grammes; crystallized phenic acid, 2½ grammes; this last has, amongst other advantages, that of penetrating the scabs more easily and dirtying the skin less. In every case in which the skin was seriously irritated, I have substituted a mixture of glycerine, water, and chloral, which has given me better results. A further washing with soap and water, followed by the administration of a bichloride of mercury lotion, or by a sulphur-bath if the skin presents epidermic pellicles, may be ordered as soon as the disease is seen to be extinct. Internal administration of arsenicus.

TUBERCULOSIS IN THE DOG. ATROPHY OF THE HEART. HYPERTROPHY OF THE LIVER.

The case was that of a spaniel, middle-sized, eight-and-a-half years old. This animal, in the course of a long walk taken in the month of August, 1897, stopped and fell down suddenly, very probably attacked with syncope. This accident was the first morbid sign remarked by its owner, who had me in to examine the patient, towards the end of the same year. At this time the dog was thin, without being in bad condition; the crotaphiles were not emaciated, the coat was glossy enough, and a breathlessness, which was very easily produced, rendered climbing a stair almost an impossibility (fits of dyspnœa took place followed by falls). The animal had, therefore, to be carried upstairs, and afterwards downstairs as well. Examination of the great splanchnic cavities gave the following particulars:—(1) Heart-beats extremely weak and heard with very great difficulty; (2) A non-horizontal zone of insensibility occupying the lower part of each side of the chest, of a total height of about four fingers, in the region of the heart; (3) Zone of costal insensibility of the liver very much augmented; (4) Short respiration, without pathological sounds; (5) Slight ascites (later the flow became very abundant); (6) Liver exceedingly swollen, and could be felt on both sides of the abdomen as far as to the sides of the penis; (7) Jaundice.

Diagnosis: Chronic pericarditis, probably complicated by valvular lesions, and certainly accompanied by considerable hypertrophy of the liver. I was not able to positively affirm the existence of tuberculosis, which an exploratory puncture (which was refused me) might, perhaps, have demonstrated. Called in to see the animal on the 28th January of this year: I was obliged to make a paracentesis. Dyspnœa was very pronounced, especially when the dog was in the horizontal position; the stomach was enormous and distended by a great quantity of liquid, and there was an almost complete absence of urination. The dimensions of the liver obliged me to make the puncture on the right, three fingerbreadths above the lateral portion of the sheath. In spite of this precaution, the diseased organ several times struck against the end of the instrument. The next day a tremendous œdema made itself visible in the four legs, in the sternum, and in the lower jaw. On the 5th February a fresh puncture enabled me to draw off, as on the former occasion, half a litre of a pale yellow liquid. Twenty-four hours afterwards the animal died. I shall not say very much upon the treatment, which consisted in administration of digitalis, caffeine, milk, vichy water, and will only mention that one of the best ways of calming the fits of asystolic dyspnœa was to place the patient in a sitting position.

Autopsy.—Weight of the dead body, 13 kilogrammes (28½ lbs.). Opening of the abdominal cavity gave passage to a great quantity of ascitic liquid of a

clear yellow colour. The enormous liver, one kilogramme in weight (one-thirteenth the weight of the whole body), of a dark colour, extended past the middle of the sheath. Its surface was riddled with small tuberculous lumps, most of them of the size of half a hunting bullet. The mesentery and epiploon were covered with a great number of blotches of a similar nature. The parietal peritoneum was especially affected in its diaphragmatic portion. The kidneys showed nothing to the naked eye. The pericardium was very thick, and of a dirty-white colour, and was distended with a liquid deeply coloured by a derivative of hæmoglobin (almost a glassful of serous matter). The two faces of the parietal wall, the mediastinum and the lower part of the parietal pleura were affected. The heart had no longer the appearance of a heart; it was a white, greyish mass, shrivelled up to half its normal size. The visceral division of the pericardium was so much thickened that it formed everywhere a granulous, greasy covering, which extended over the right ventricle to a thickness of three, four, and five millimetres. This injury is of the same nature as that of the parietal portion of the serous membrane, and caused partial atrophy of the ventricular fibres. The auricles, to the naked eye at least, *no longer showed any traces of muscular fibres*, they were made up of a white tissue analogous to that covering the ventricles. The lymphatic ganglia of the abdomen and of the chest were considerably hypertrophied. The lungs were more or less affected. Bacteriological examination also showed me tuberculous bacilli in the neoplasia.—*Recueil Vétérinaire.*

Correspondence.

THE USE AND ABUSE OF OUR COUNCIL RESPECTING ADVERTISING, ETC.

SIR,—A good deal of discussion has taken place of late respecting advertising and general professional conduct. Undoubtedly there is much to be said in favour of the attempt to suppress advertising, but as it seems to me that the Council have carried this particular point too far, while overlooking other more serious evils, I desire to point these out, while inviting discussion on the whole subject of professional conduct.

Advertising.—At one time I was myself in favour of the suppression of advertising, but since reading the arguments in favour of permitting it to a limited extent, I have come to the conclusion that the action of the Council, in preventing a young and struggling practitioner from inserting an innocent advertisement in a local paper, merely stating where he can be found when required, is extremely severe. I am of opinion that, when the profession voted against advertising, it was not intended that even this very limited form of the practice should be prohibited. I am certainly against the advertising of quack remedies, special skill, and charges; but, even in this, no distinction should be made between the rich and the poor.

Why should a young and obscure practitioner, who, having neither money nor influence for his defence, is compelled to bow to the decision of the Council, be restrained from simply putting his name and address in a local paper, while many others in good positions, able either to dispense with advertising altogether, or to defend themselves if attacked by the Council, are allowed without interference to practise, or to connect themselves with, advertising of a far more questionable kind?

We all know that the Council allows certain members of the profession, dignified by the title of "Professors," to be connected with an institution which enters into competition with the men who have studied within its walls —and paid handsomely for their tuition—by means of advertising, and by affording the public the advantages of a large infirmary, and the benefit of the skill and knowledge of the said professors (who are looked up to by all as great authorities on many branches of professional work) at lower fees than any practitioner would probably charge, even in the poorest parts of England.

Again, some men use the Royal and other noble coats of arms on their notepaper, bill-heads, sign-boards, etc., while others allow their names to be placed on prospectuses of insurance companies. Are not these also objectionable forms of advertising?

Another class of men are allowed to answer correspondence in live stock journals, even adding their names, sometimes their addresses, and, in some cases where direct advice is required, their charges. Others are permitted to issue pamphlets at various prices, from a shilling downwards, to instruct the public how to dispense with veterinary advice.

Forges.—I see no more harm in advertising than in keeping a forge, the foreman of which—and even the veterinary surgeon himself in some instances —touts for patronage in shoeing.

In some instances the shoeing is done at a nominal figure, in order to secure the veterinary work. Even where these objectionable practices are absent, I think it is only fair that, as we prevent the farrier from encroaching on our domain, we should ourselves abstain from intruding on his humbler sphere of labour, which it costs him years of hard labour to become proficient in. I would not compel those veterinary surgeons who already have forges to relinquish them, but I think that no others should be allowed to take them up. In my opinion, the time has now arrived for us to divorce ourselves from both keeping forges and dealing in horses.

Horse Dealing.—Many veterinary surgeons, of course, deal in horses in a perfectly honourable manner; but this cannot be said of many others. It is well known to many men in the profession that there are veterinary surgeons dealing in horses, whose common practice it is to condemn the horses of other dealers and to recommend their own. There are even some who will lend themselves to horse "chaunting," and sell, or be instrumental in selling "bishoped' horses. Certainly there are many who would never dream of indulging in practices of this nature; but, at the best, horse-dealing lowers our profession in the eyes of the public, and should, I think, be now discontinued. Many friends have asked me, "Why does not your Council put it down?"

There are many other matters, more or less serious, which might well be looked into by the Council.

No veterinary surgeon should be allowed to employ, in any matter connected with his practice requiring special skill and knowledge, any but a qualified man or a registered *bona fide* pupil or student. The General Medical Council have passed a very strict law against the employment of unqualified assistants, and I think our Council should follow their example.

Again, why should the Council allow veterinary surgeons to place their boards over forges not their own? Is not this *infra dig.?* Some practitioners will hang about repositories, waiting for the chance of introduction to clients, like dock labourers or factory hands when business is slack. Does this help to raise the status of the profession? There are even men who will grant a certificate without seeing the horse.

Many veterinary surgeons never lose a chance of injuring a neighbouring practitioner. Some, when examining on behalf of an insurance company, a horse which is being attended by another veterinary surgeon, will find fault

with the treatment in private conversation with the owner. Others will frequently solicit the clients of neighbouring practitioners, extolling their own skill and methods of treatment, and making more or less open attacks on those of their rivals.

Actions such as these are not at all easy to bring home to the perpetrators; but this fact, which probably encourages the least respectable portion of the profession in such conduct, should make the Council all the more zealous in its prevention.

I write this in support of those who are prevented by the Council from advertising in a manner which appears to me to be perfectly legitimate, and also with the object of inducing discussion on what, in my opinion, are far worse evils. I sincerely hope that the subject of professional conduct may be brought prominently before the voters at the next election, and that they will not fail to return men prepared to consider the whole question in all its bearings, and to enter on the task of purifying the profession vigorously and, at the same time, judiciously.

JUSTICIA.

Review.

MULLER'S DISEASES OF THE DOG. TRANSLATED FROM THE GERMAN BY GLASS.

This should prove a very useful addition to the scanty literature on canine diseases.

The author appears to have had very considerable experience in the treatment of dogs, and to have brought a good knowledge of pathology and therapeutics to aid him in his work, so that on the practical as well as on the theoretical side he appears well equipped to give us a useful manual on this important subject, and this, we think, he has done.

The translation is marred by some dialectic faults and by some others less excusable (Keratitis translated as inflammation of the sclerotic, for instance), which will bear emendation in a future edition.

Communications, Books, Journals, etc., Received.

The Lancet; Land and Water; Veterinarian; Veterinary Record; American Veterinary Review; Journal of Comparative Medicine; Australian Farm and Home; Results of Use of Tuberculin, by James Wilson, M.A.; Bacteriological Diagnosis, by St. John Reid; Country Life Illustrated; Recueil de Médecine Vétérinaire (Alfort); La Presse Vétérinaire (Paris); L'Echo Vétérinaire (Liége); Annales de Médecine Vétérinaire (Brussels); Berliner Thierärztliche Wochenschrift (Berlin); La Clinica Veterinaria (Milan); Il Nuovo Ercolani (Pisa); La Revista Veterinaria (Buenos Aires); Deutsche Thierärztliche Wochenschrift (Hannover und Karlsruhe); Archivos de Medicina Lisbon: José Bastos); The Johns Hopkins Hospital Reports; a Text Book of Veterinary Ophthalmology, by Geo. G. Van Mater, M.D., D.V.S.; Trattato di Tecnica, e. Terapeutica Chirurgica Animali Domestici del Dott. N. Lanzillotti, Buonsanti; the Clinical Diagnosis of Lameness in the Horse, by W. E. A. Wyman, V. S., South Carolina; the Scottish Medical and Surgical Journal.